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Subscribers are requested to observe that the receipt of THE CHEMIST AND DRUGGIST in a *Green Wrapper* indicates that with that number the term of subscription has expired, and that no further number will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order, without an exact system like this.

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THE MONTH

The Pharmaceutical Council met on March 1. Mr. Hills presided, and the absentees were Messrs. Brown and Sandford.—A cheque for 15*l.* for the Benevolent Fund was announced by the secretary as having been received from the treasurer of the Chemists' Ball committee. For the same fund it was reported that 85 new subscriptions had been received in January, and a still larger number in February. It was resolved to invest a further 500*l.* in consols.—Satisfactory reports were sent in from the School of Pharmacy, the laboratory appearing to be especially flourishing. There had been 83 entries since the opening of the session, and 67 were working at the present time, every bench being occupied. Room for ten more students was preparing.—The secretary was instructed to apply to the South Kensington authorities for permission to hold the conversazione at the Museum on May 17 next.—A discussion respecting patent medicines ensued, suggested by a recent memorial from Exeter, where a young lady had died from an overdose of a patent medicine containing chloral. Mr. Hampson thought it would be impossible to make vendors treat patent medicines as poisons. He omitted to say precisely where was the difficulty, unless it lay in the fact that these articles were largely used throughout the country and in the colonies. Mr. Greenish mentioned a case of poisoning from neuraline, consequent on which he had resolved to label that substance poison henceforth, and he thought the same regulations which governed the sale of other medicines should apply equally to these. Mr. Hampson remarked that neuraline was already labelled poison. Mr. Owen thought that if people wanted to kill themselves it was impossible to prevent them. Some people would prosecute the New River Company if a man drowned himself. Messrs. Mackay, Frazer, and Baynes spoke against legislation in regard to patent medicines; Mr. Schacht was doubtful; Mr. Williams mentioned the failure of the council in a previous effort in the same direction, due to the opposition of the trade generally; and Mr. Betty reminded the council that chloral hydrate was the particular substance under discussion. A somewhat too candid proposal, to the effect that the subject was too difficult for the council, was made by some one, but negatived, and it was ultimately shunted back into the "Law and Parliamentary" siding.—The next discussion was on prescribing by chemists. A member of the society, residing at the East end of London, had written to the council for advice, stating that the Medical Defence Association was threatening to prosecute all chemists who might infringe the law as recently laid down by Baron Bramwell. This statement, it appeared afterwards, was based on the fact that the Defence Association had distributed among the chemists of the eastern districts of London a circular drawing attention to the case of the Apothecaries' Company *v.* Nottingham. Mr. Shaw urged that the council should take legal advice on the matter. It was desirable to know whether the recommendation of a cough mixture or an aperient medicine was really an infringement of the law. Mr. Atherton thought the council might communicate with the Medical Defence Association. The other gentlemen who spoke advocated a waiting policy. It was generally agreed that in the special case which had arisen the defendant had, as the president remarked, overstepped proper bounds, and Mr. Mackay thought the Defence Association would think twice before venturing to press their advantage. Mr. Baynes said that according to Baron Bramwell's ruling he infringed the law every day, and so did every chemist and druggist. Mr. Robbins thought chemists need not be under much apprehension.—Mr. Schacht succeeded in persuading the council to refer the new regulations respecting the prize examinations back to the committee which had framed them, in the hope that these examinations might be held at the various local centres, and not exclusively in London and Edinburgh. He also suggested that the two boards of examiners should themselves select the examiners for this particular duty.—A discussion respecting the infringement of the Pharmacy Act at Glasgow and elsewhere then took place, in the course of which Mr. Hampson confessed that whenever the question of prosecutions came up he felt his conscience somewhat prick him, inasmuch as the society did not interfere with those who were breaking the law with impunity at its own doors, namely, the co-operative stores, who were infringing the Act. Even now he thought it was not too late for the society to take the matter up, and do its duty. Mr. Frazer was also one of the few who went in for prosecuting large offenders as well as small ones.

The Irish Pharmaceutical Society has held its first examination, at which nine out of ten candidates were passed as pharmaceutical chemists. The first Preliminary examination is to be held the first week in April.

The session of the British Parliament for 1876 does not seem from present appearances to threaten a very pharmaceutical aspect. A bill to prevent the administration of poisonous drugs to animals, brought in by Sir J. D. Astley, chiefly in the interests of sporting gentlemen, has been read a second time. The promoter does not this year, as he did last, with that simplicity of selfishness so peculiar to his class, propose to blockade the entire trade in those drugs which would be injurious to his horses or cattle.

In answer to a question by Mr. W. Williams, Mr. Sclater-Booth intimated pretty plainly that he was not inclined to meddle with the Sale of Food and Drugs Act again this session. The desire of the former gentleman seemed to be to make the appointment of analysts compulsory.

The Royal Commission appointed to investigate the practice of vivisection has issued a report exonerating the medical profession from anything like wanton cruelty, but recommending that in future experiments on live animals shall only be undertaken by duly licensed persons.

A deputation from the committee of the National Chamber of Trade had an interview with Sir Thomas Chambers, Q.C., M.P., in the conference room of the House of Commons on Tuesday, the 6th inst., with reference to his notice of motion for a select committee to inquire into the whole subject of Civil Service trading. Sir Thomas Chambers has in consequence expressed his intention to move for the appointment of that committee on the 25th of next month. There are a large number of petitions in course of signature in support of this committee, and the National Chamber of Trade is vigorously pushing forward this most important business.

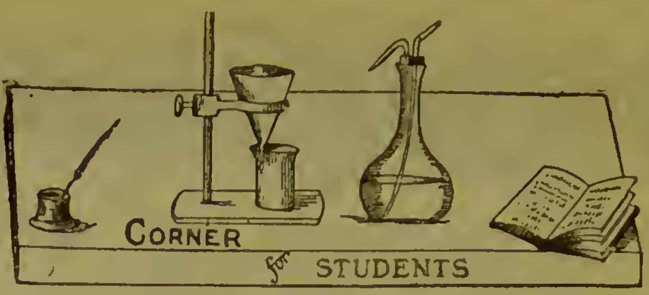
The proposal to appoint a public analyst for Bath was rejected lately by the town council, on the ground that "the office of analyst might be made a means of considerable annoyance to many citizens." It was also thought that "the objection to the tests and to the analysts themselves was even stronger than to the undefinable Act of Parliament." The Bath town council is no doubt open to a little raillery anent this resolution, but it comes with a bad grace from the analysts themselves, who have furnished very sufficient reason for such a decision.

Among the deputies elected to the new French Assembly are M. Menier, the wholesale druggist and chocolate maker, and M. Raspail, the famous old radical chemist, whose portrait and memoir we published last July. Menier is also a republican.

The Exhibition of Scientific Apparatus will be open in London, in the Exhibition Buildings, South Kensington, from April 1 to September 30. Nearly every European country will contribute, and the collection cannot fail to prove highly interesting. We trust the Pharmaceutical Council will take our suggestion, and seek for permission to hold their annual conversazione in the midst of this unique display.

Milk of sulphur and Epps' cocoa have again been arraigned in a police court under the Adulteration Act. Mr. Sumner, a chemist, of Coleshill, near Birmingham, had sold both articles. The cases were well defended, and the magistrates decided in favour of the defendant in both instances. The prosecutors, one would think, must have known that both questions had been already settled at law, and therefore their proceedings seem somewhat needless and vexatious. And yet the magistrates refused to grant costs against them.

The stamp duty on patent medicines shows an increase in the consumption in the year ending March 31 last of 13,849*l.* The duty in 1874 was 95,388*l.*, and in 1875, 109,237*l.*



Conducted by Richard J. Moss, F.C.S.

We purpose again distributing samples of an official compound for examination. The substance is to be submitted to a systematic qualitative examination, so as to detect the metallic and acid radicals that may be present. The name of the substance is to be ascertained, and a report made as to its purity.

Students who intend to compete should send us their names and addresses before the 20th inst. On the 25th we shall forward the sample.

Students' papers will be received up to April 15.

Answers.

The substance given for analysis in January consisted of mercurous chloride adulterated with about 30 per cent. of barium sulphate. It contained a minute trace of barium chloride and triad iron. Judging from the great variety of results arrived at by our correspondents, this was a rather difficult exercise. In addition to the substance actually present, the following were "detected:"—Dyad mercury, bismuth, copper, cadmium, tin, arsenic, manganese, zinc, aluminium, calcium, magnesium, potassium and the phosphoric, nitric and silicic radicals. Perhaps the most prolific source of error with which we have had to deal is an incomplete and carelessly performed preliminary examination. The information obtained from the preliminary tests, such as are usually described in hand-books of qualitative analysis, is often very much undervalued by students. Fresenius says: "The student should never omit the preliminary examination; the notion that this omission will save time and trouble is very erroneous;" and our experience quite confirms this opinion. It is very important to have some notion of the nature of the substance under examination before it is submitted to the tedious operations of a systematic wet analysis. The present case affords an excellent illustration of this fact, and shows how much information may sometimes be obtained by a few simple experiments. When a small portion of the powder was heated in a glass tube closed at one end a sublimate was produced without previous fusion, while a considerable residue remained. The sublimate was yellow while hot, and became white in cooling. A portion of the original substance was now heated in a tube with sodium carbonate: globules of mercury sublimed. These two experiments show the presence of a salt of mercury, the characters of the sublimate obtained in the former one being those of mercurous chloride, evidently mixed with a white substance, unaltered at a red heat. A portion of this substance obtained from the ignition tube became highly luminous when heated in charcoal, suggesting the presence of a salt or one of the alkali earths. With sodium carbonate in charcoal there was no metallic bead or characteristic incrustation, but the resulting mass, when placed on a silver coin and moistened with hydrochloric acid, produced a dark brown stain, showing the presence of a sulphur compound. Another small portion of the residue from the first ignition in the glass tube, heated on a platinum wire, imparted a green colour to the flame. This reaction, in conjunction with the results of the other tests, undoubtedly indicates barium; and as sulphur was found it is probably sulphate of barium. Now, admitting the necessity for great caution in the interpretation of blowpipe reactions, it is obviously a matter of much importance to learn with so little trouble that the substance probably consists of mercurous chloride and barium sulphate. If the student has accustomed himself to these simple preliminary tests he will be able to attach greater weight to his conclusions; but it is the safest plan to avoid being prejudiced, and to take the results of the preliminary examination as merely probable evidence. Experience gradually removes the element of uncertainty which is at first so discouraging to the student: he must remember that experience will come if he only works for it.

PRIZES.

The First Prize for the best analysis has been awarded to **Donald Grant**, 5 Pakenham Street, Belfast.

The Second Prize has been awarded to A. E. **Robinson**, 9 Bull Ring, Birmingham.

Marks awarded for Analyses.

Donald Grant (1st prize)	95
A. E. Robinson (2nd prize)	92
Omega	90
Hercules	80
Calcium	75
C. J. B.	75
J. Stevens	70
Specific Gravity	63
F. W.	60
Enitar	50
G. Aston	50
Non Nullus	50
H. C. D.	50
Remus	50
Hydrargyrum	10
H. G. S.	10

TO CORRESPONDENTS.

⁂ All Communications should include the names and addresses of the writers.

Prizes.—The students to whom prizes are awarded are requested to write at once to the publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as a second prize.

Hercules.—Your work is very good for a beginner: all you want is practice.

Calcium.—It is strange that you detected calcium in quantity; possibly you did not add enough potassium bichromate to precipitate all the barium, and the portion in the filtrate was precipitated on the addition of ammonium oxalate.

Specific Gravity.—The reaction with potassium ferrocyanide, which you attributed to manganese, was doubtless due to a trace of iron; however, we cannot throw much light on the subject, as you do not give us the necessary account of your work.

F. W.—It was not very clever of you to conclude that the substance insoluble in boiling aqua regia was alumina. You ought to practise yourself in the examination of substances insoluble in water and acids.

Enitar.—It would be very strange if you did not detect silica after fusing the substance with alkaline carbonate in a porcelain crucible. It is very probable that your potassium hydrate contains a trace of lead derived from the glass of the bottle in which it is kept, and that this is the cause of the dark-coloured precipitate referred to.

G. Aston.—In addition to proving the presence of certain substances you have to show that others are absent, therefore, a complete analysis is necessary; in fact, all ordinary metallic and acidulous radicals may be present.

Non Nullus.—Your reagents must surely be of very inferior quality, or else they are endowed with an unusual creative faculty. Or perhaps you are not sufficiently particular about the cleanliness of test tubes, &c.

H. C. D.—A small portion of the substance mixed with sodium carbonate and ignited in charcoal gave the sulphide reaction most unmistakably.

Remus.—You are surely not serious in calling the statement of results which you sent us "an account of the analysis." For all we know these results may have been obtained by a most unscientific method.

Hydrargyrum.—If you had even taken the trouble to apply the simple official tests for the purity of mercurous chloride, you could scarcely have failed to detect such an obvious adulterant as barium sulphate.

H. G. S.—It was a great mistake not to observe that all the substance did not sublime when heated on platinum foil.

Ark.—You omitted to send your name when applying for a sample.

SPONTANEOUS GENERATION.

THE question whether living bodies ever have been or ever can be generated from dead matter has been for years a subject of discussion exciting the deepest interest, and is fraught with considerations of the most serious nature. Hitherto the chief champions of the opposing theories have been Dr. Charlton Bastian, who vigorously maintains the formation of bacteria in fluids from which the atmosphere and its germs have been perfectly excluded, and on the other side M. Pasteur, whose experiments have been singularly able and ingenious, and who draws from them the conclusion that the hypothesis of spontaneous generation is a chimera. It is not our purpose at the present time to give a summary of the labours of these learned investigators: we propose now very briefly to present a view of the experiments which have determined Professor Tyndall to give his support in a most unqualified manner to the views of M. Pasteur. It is interesting to note in passing that the philosopher who not long since discerned in matter the promise and potency of every form and quality of life now comes forward to declare that, so far as he can judge from the evidence furnished by a long series of experiments, performed with the utmost ingenuity and carefulness, there is an impassable gulf between matter and life, which separates eternally these divisions of creation—that in the lowest form to which we can trace living organisms there is still abundant evidence that propagation is dependent on previous living beings, and that these do not spring from an exterior or a dead source.

The method pursued by Professor Tyndall was to construct a number of small chambers with glass sides and front and wooden frameworks. Along the bottom were apertures for a row of test tubes, and above an arrangement for the admission of the liquids to be experimented on into the test tubes. These chambers were allowed to stand a few days, until a concentrated beam of light passing through them showed by perfect darkness that the motes in the air had all settled on the sides and bottom, where they were retained by a coating of glycerine. The test tubes were then filled, boiled from below, and abandoned to the action of the moteless air.

The question to be resolved was—Can air thus retaining all its gaseous mixtures, but self-cleansed from mechanically suspended matter, produce putrefaction? To this question, both the animal and vegetable worlds returned a decided negative. Among vegetables, experiments were made with hay, turnips, tea, coffee, hops, repeated in various ways with both acid and alkaline infusions. Among animal substances, there were many experiments with urine; while beef, mutton, hare, rabbit, kidney, liver, fowl, pheasant, grouse, haddock, sole, salmon, cod, turbot, mullet, herring, whiting, eel, oyster, were all subjected to experiment.

The result was that infusions of these substances exposed to the common air of the Royal Institution laboratory, maintained at a temperature of from 60° to 70° Fahr., all fell into putrefaction in the course of from two to four days. No matter where the infusions were placed, they were infallibly smitten in the end. The number of the tubes containing the infusions was multiplied till it reached six hundred, but not one of them escaped infection.

In no single instance, on the other hand, did the air, which had been proved moteless by the searching beam, show itself to possess the least power of producing bacterial life or the associated phenomena of putrefaction. The power of developing such life in atmospheric air and the power of scattering light are thus proved to be indissolubly united.

The sole condition necessary to cause these long dormant infusions to swarm with active life is the access of the floating matter of the air. After they have remained for four months as pellucid as distilled water, the opening of the back door of the protecting case, and the consequent admission of the mote-laden air, sufficed in three days to render the infusions putrid and full of life.

These experiments, Professor Tyndall argues, are convincing. Suppose, he says, these germs in the atmosphere, instead of being beyond the reach of our microscope, were augmented in magnitude until they came within range of the unaided senses. Let it be assumed that we do not know whether they are germs, particles of dead organic dust, or particles of mineral matter. Suppose a vessel (say a flower-pot) to be at hand filled with nutritious earth, with which we mix our unknown particles; and that in forty-eight hours subsequently buds and blades of well-defined cresses and grasses appear above the soil. Suppose the experiment, when repeated over and over again, to yield the same unvarying result. What would be our conclusion? Should we regard those living plants as the products of dead dust, of mineral particles; or should we regard them as the offspring of living seeds? The reply is unavoidable. We should undoubtedly consider the experiment with the flower-pot as clearing up our pre-existing ignorance; we should regard the fact of their producing cresses and grasses as proof positive that the particles sown in the earth of the pot were the seeds of the plants which have grown from them. It would be simply monstrous to conclude that they had been "spontaneously generated."

This reasoning applies word for word to the development of bacteria from that flowing matter which the electric beam reveals in the air, and in the absence of which no bacterial life has been generated.

Another very striking experiment was recorded. Six years ago it was found that to render the laboratory air free from floating matter it was only necessary to permit a platinum-wire heated to whiteness to act upon it for a sufficient time. Shades containing pear juice, damson juice, hay and turnip juice, and water of yeast, were freed from their floating matter in this way. The infusions were subsequently boiled, and permitted to remain in contact with the calcined air. They are quite clear to the present hour; while the same infusions exposed to common air became mouldy and rotten long ago.

Professor Tyndall has also repeated Dr. Bastian's own experiments with solutions in hermetically-sealed tubes. The latter asserts that by boiling infusions of some animal matter in a flask, whose neck is sealed during the ebullition, and setting aside in a warm place, the previously heated fluid within the hermetically-sealed flasks will, after a variable time, swarm more or less plentifully with bacteria and allied organisms. Professor Tyndall had prepared 139 flasks, containing infusions of every conceivable kind of animal matter, and not one of this cloud of witnesses offered the least countenance to the assertion that the liquid within flasks boiled and hermetically-sealed swarm subsequently more or less plentifully with bacteria and allied organisms.

Professor Tyndall goes on to show that in his opinion the experiments made by Dr. Bastian and others who have supported his views must be defective in some particulars, and he explains how easily such errors may creep into the most apparently exact observations. He also proceeds to discuss the relation of this investigation to the very important subject of the origin of contagious disease.

Since the delivery of this lecture at the Royal Institution there have appeared in the pages of the *British Medical Journal* several letters from Dr. Bastian, Dr. Lionel Beale, and others on the one side, and from Professor Tyndall and M. Pasteur on the other. To the insinuation of error in his experiments Dr. Bastian replies with considerable warmth, and intimates that Professor Tyndall's failure to obtain certain results should not be accepted as proof of the inaccuracy of experiments made by himself and by many most eminent men of science, but is rather to be sought for in the insufficient care with which his (Professor Tyndall's) experiments were conducted. Especially he points out that Professor Tyndall, in reproducing his own experiments, had disregarded certain conditions of temperature which he had laid down. Professor Tyndall clears himself of the charge of inattention by showing how minutely he had attended to every particular in the investigation; and referring to Dr. Bastian's insinuations of the lack of knowledge of the subject which he (Professor Tyndall) had displayed, "With a discipline of twenty-six years in experimental inquiries of no easy kind, I thought it not beyond me to follow the directions thus given (by Dr. Bastian) to the members of the Pathological Society, young and old."

It is not necessary for us to follow the further windings of the discussion. Our object has been only to give an idea of the latest aspect of biological science, and to indicate the probable tendency of future investigation.

Scientific Notes from Foreign Sources.

ON PILOCARPINE AND THE ESSENCE OF "PILOCARPUS PINNATUS" (JABORANDI).

By Dr. Ernest Hardy.*

The leaves and branches of *Pilocarpus pinnatus* contain an alkaloid, pilocarpine, which gives to this plant its peculiar physiological and therapeutic properties, a volatile oil, and several salts which have not yet been examined. The best method of obtaining pilocarpine is as follows:—An infusion of the leaves is evaporated to a syrupy consistence, mixed with an excess of magnesia, and further evaporated to dryness. The residue is treated with chloroform, the chloroform solution agitated with water, and the chloroform removed by spontaneous evaporation. From the aqueous solution free pilocarpine is obtained as a syrupy mass, soluble in water and in alcohol, and forming crystalline salts with hydrochloric, nitric, and sulphuric acid.

By distillation with water the leaves furnish a volatile oil, which may be readily collected in a Florentine receiver. Ten kilogrammes of leaves yielded 56 grammes of crude oil. The oil has a complex composition: it contains a hydrocarbon, boiling at 178°, a body passing over at 250°, and a third substance which distils at a still higher temperature, and after some time solidifies into a colourless transparent mass. The last two substances have not been further studied.

The hydrocarbon boiling at 178°, pilocarpene, is a colourless, transparent, mobile liquid, lighter than water, and having a peculiar tolerably agreeable odour. Its density at 18° is ·852; on a ray of polarised light it has a rotary power to the right of 1 to 1·21. In composition it corresponds to the formula $C_{10}H_{16}$. With hydrochloric acid it forms both solid and liquid bichlorhydrates, $C_{10}H_{16}2HCl$. They are obtained by passing a current of dry hydrochloric acid into pilocarpene, either pure or mixed with ether. The solid bichlorhydrate is a crystalline, colourless, transparent body, fusing at 45° 5′. It crystallises immediately on adding a crystal of chlorhydrate of turpentine to a saturated solution: it gives with ferric chloride the colour reactions which are characteristic of bichlorhydrates, viz., rose, red, and blue successively. No monochlorhydrate, artificial camphor, is produced in this reaction. The essential oil of jaborandi presents many analogies with essence of citron: it does not appear to possess any physiological action.

TO DISTINGUISH PETROLEUM BENZINE FROM THE BENZINE OF GAS TAR.†

If in some cases petroleum benzine may render the same services as tar benzine, yet for certain purposes it is necessary to be able to distinguish them. M. Pusch has indicated in the *Pharm. Centralhalle* a very simple process for this purpose, and our own observations enable us to recommend it as perfectly reliable. Some cubic centimetres of the liquid are introduced into a test tube, and agitated with a fragment of iodine. Tar benzine dissolves the iodine, and assumes a violet-red colour, whilst petroleum benzine is coloured raspberry red. When a mixture of the two benzines is treated in this way a liquid of intermediate tint results; but the latter colour prevails to an extent which makes it possible to recognise by this means the least addition of petroleum benzine to tar benzine.

ON THE DETERMINATION OF FUSING POINTS.

M. J. Picard.‡

The process generally employed to determine fusing points consists in placing a fragment of the body in a capillary tube, which is then attached to the bulb of a thermometer and plunged in a bath of water, oil, or paraffin. The instant is observed when the mass, which in the solid state was opaque, becomes transparent. This method has the disadvantage of depending on a simple change of shade. In a bath of very clear water, with an agreeable light and good eyes, this change may be observed with great precision in many cases; but when the fusing point is high, and a bath of paraffin is employed, which, having been used before, is coloured and slightly clouded, when, in addition, the eyes are already fatigued by attentive observation, the substance assumes, before melting, a deceptive appearance or a deep colour, and it is possible to err to the extent of 10° or 20°. It was sought, therefore, to replace the observation of transparency by another index of complete fusion, and the following method was devised. A piece of ordinary quill tubing is contracted in the lamp about 3 centimetres from one end; then, 2 or 3 centimetres lower, it is drawn out so as to form a capillary continuation, which is bent upon the large end in the form of the letter U. A small fragment of the substance is introduced by the large end and gently heated, so that on solidifying it closes the commencement of the capillary portion. The large limb is then sealed in the blowpipe at the previously contracted portion; there is thus above the substance a large reservoir of air. The tube is fixed along a thermometer by means of an india-rubber ring in such a way that the curve comes against the middle of the thermometer bulb. The arrangement is plunged into a paraffin bath so that the air reservoir is wholly immersed. Whilst heating, the bath should be constantly agitated. As soon as the substance is completely fused it is projected into the capillary tube by the pressure of the air above. This movement is so sudden that the observation leaves nothing to desire in point of precision. There is no fear of the phenomena being produced before complete fusion because of softening of the substance. The tube being conical where the body is placed, the softening only produces greater adhesion to the glass. Consequently, as projection is produced only on complete fusion, results are obtained a shade too high if too much of the substance is used. The only cases where this process may not be applicable are those of bodies which contract strongly on cooling. The closure is not then hermetical, and the air of the reservoir can dilate freely, so that the projection is almost *nil* at the moment of fusion. In such cases it is sufficient to place a drop of mercury upon the substance at the bottom of the reservoir. In cases where the fusing point is very high or the body strongly coloured, this process gives, according to the author, excellent results. In other cases it will serve usefully as a check.

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* *Journal de Pharmacie de Genève*, January 20, 1876, from *L'Union Pharm.*, December, 1875.

† *Journ. de Pharm. de Genève*, January 20, 1876.

‡ *Le Monde Pharmaceutique*, February 3, 1876.

TO CLEANSE LABORATORY VESSELS.[*]

Flasks which have contained oil or fatty matter may be easily cleansed by a solution of permanganate of potassium. Hydrated peroxide of manganese is formed, which, on addition of strong hydrochloric acid, liberates chlorine. This decomposes the organic matter, and allows of washing with water. When the flasks have held resinous solutions it is necessary to wash with a caustic alkaline lye, and afterwards to rinse with alcohol. To remove turpentine, petroleum, photogene, &c., wash with 30 or 40 grammes of sulphuric acid and rinse thoroughly in a stream of water.

PREPARATION OF PHOSPHORUS PILLS.

Many things have been recommended for the incorporation of phosphorus in pill masses, *e.g.*, fat, oils, wax, &c. W. B. Adrington, in the *American Journal of Pharmacy*, accomplished this purpose in the following manner:—The weighed out quantity of phosphorus is placed in a porcelain mortar, some bisulphide of carbon is added, and solution promoted by trituration with the pestle. Immediately solution is effected, some extract (of gentian, quassia, or dandelion) is rubbed in, and finally as much lycopodium as will give the desired consistency. During the operation the very volatile bisulphide flies off, and none remains in the finished pills.

FOWLER'S SOLUTION OF ARSENIC.

C. H. Ménière[†] says that this solution, as prepared according to the Paris Codex, undergoes in time an important change, which has not hitherto been noticed. It becomes less transparent, a volatile oil separates; later a black point is perceived, followed by nodulose filaments. Around or near these new formations crystals of arsenious acid group themselves. This phenomenon, although very slowly produced, continues without interruption; and in this way crystals of arsenious acid are grouped on the first separated nucleus of essential oil, in consequence of a peculiar attraction. Crystals of arsenious acid, as they occur in nature, retain their transparency even after prolonged exposure to the air, whilst those which are here produced artificially, and like the first octahedral, effloresce on exposure. Certain crystalline silky needles floating in the liquid, especially near the bottom, are delicate and brittle, and generally correspond in character with pharmacolithe or arseniated chalk. These, however, are only produced if water containing lime is substituted for distilled water in making the preparation. Some years are necessary for this change to manifest itself: from 100 grammes of solution 15 centigrammes of arsenious acid were collected after three years. This observation may have some value in that it refers to a medicament which is rarely renewed by pharmacists.

PURIFICATION OF SULPHURIC ACID.[*]

The usual method of removing arsenic from sulphuric acid by means of sulphuretted hydrogen is prolonged and costly. Professor Thom, of Pesth, points out one much more simple. The acid obtained from the lead chambers, marking 50° B., is conveyed into a leaden vessel, at a temperature of 70° to 80° R., and treated with a weight of sulphate (?) of sodium dissolved in water corresponding to the proportion of arsenic in the acid. Sulphide of arsenicum is precipitated in yellow flocks, which aggregate and float on the surface. In drawing off the acid, the sulphide remains at the bottom of the vessel, whence it is removed when a quantity has collected. The operation is easy to conduct; if care be taken in adjusting the sulphate of sodium, so as to avoid excess, very little sulphurous acid is produced. The purified acid contains from 3 to 4 per cent. of sodium sulphate, but for most purposes this is not an objection. In the experiments, acid at 50° B., containing ·098 per cent. of arsenic, was thus purified so that ·004 remained.

COTOIN.[†]

Some time ago J. Jobst announced the separation of a crystalline body from coto bark. He has since named it "cotoin," and describes his process for obtaining it as follows:—Coarsely powdered coto bark is completely exhausted with cold ether, by percolation in a displacement apparatus. The ether is recovered from the product by distillation on a water bath, and the residue transferred, whilst still warm, to a porcelain dish, and mixed with 6 parts of petroleum ether. On addition of the latter, and after consequent complete evaporation of the ethyl ether, a large quantity of resin separates, when the supernatant, clear, and still warm solution is poured off and allowed to crystallise. The crystalline mass is collected on a filter, subjected to pressure, and recrystallised from hot water. Cotoin thus obtained presents light, yellowish-white crystals, resembling commercial gallic acid. It possesses the biting taste of the bark in the highest degree, is with difficulty soluble in cold, more easily in hot water, and readily soluble in alcohol, ether, chloroform, and carbon bisulphide. As regards the medicinal action of cotoin, this should give highly interesting results to whoever undertakes to make a therapeutic examination of it, if one may judge from the remarkable properties possessed by the bark.

LIQUOR CHLORAL CAMPHORATUS.[‡]

This new preparation, which is proposed as a substitute for camphor oil, is obtained by reducing camphor to a fine powder by trituration with absolute alcohol, and then mixing with an equal weight of chloral hydrate. The result of the admixture is a clean, colourless, syrupy liquid, possessing the smell and taste of the ingredients which compose it. It cannot be considered a chemical compound, as the addition of water causes separation of the camphor and chloral. According to the *Centralhalle* a fluid is obtained also if one part of camphor is mixed with two of chloral hydrate, or three of camphor with two of chloral hydrate. It forms a clear mixture with turpentine, chloroform, benzine, &c., but not with solution of ammonia. Rubbed on the skin it produces a burning sensation. It is said to have been employed with success against rheumatism and toothache, and inhalation of the vapour is recommended to the notice of physicians.

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[*] *Le Monde Pharmaceutique*, February 3, 1876, from *Dingler's Journal*.
[†] *Repert. de Pharm.*, February 10, 1876, p. 65.

[*] *Moniteur des prod. chimiq.*, January 23, 1876, p. 11.
[†] *Pharm. Zeitung*, February 12, 1876, p. 100.
[‡] *Pharm. Zeitung*, December 4, 1875, p. 793.

PHOSPHORUS PILLS.*

Eli Lilly recommends the following formula:—

Syrup, U. S. P.	260 parts
Wheaten flour	340 „
Phosphorus	6 „

Weigh the syrup in a stout sound bottle of sufficient capacity to hold one-fourth more than the amount of syrup used. Place the bottle in a water bath, and raise the temperature to 150° F. Drop the phosphorus into the warm syrup, and as soon as melted close the bottle with a good cork, take it from the bath, and, holding it upright, give a gentle whirling motion until the phosphorus is divided into small globules, when it must be violently shaken till cold. Having the flour finely sifted and placed in a mortar, pour in the mixture of syrup and phosphorus, and rapidly form the mass, which, when completed, may be packed down in small glazed earthenware jars, and tin foil placed under the covers to retain the moisture and exclude the air. One grain of this mass contains $\frac{1}{100}$th of a grain of phosphorus.

ERIODICTYON CALIFORNICUM.

This hydrophyllaceous plant is the *E. glutinosum* of Bentham and the *Wigandia Californica* of Hooker and Arnott. It is an evergreen, and grows on the rocky barren soil of the Pacific slope, particularly in parts of Mexico and California. From the leaves H. S. Wellcome † obtained, by maceration in strong alcohol, 20 to 30 per cent. of a transparent amber resin, having a highly aromatic and somewhat balsamic odour and taste. An aqueous infusion of the exhausted leaves yielded an intensely bitter extract. The plant has long been in use by the Spaniards and Indians as a specific for lung diseases, more especially consumption, for which they aver it is a certain cure. They call it "consumptive's weed," but it is more generally known as *yerba santa* (holy herb), mountain balm, and, from the fondness evinced by bears for the foliage, bear's weed. Dr. L. H. Bundy, of California, reports cures of severe, long-standing cases of chronic bronchitis by this remedy; pneumonia and rheumatism were also successfully treated by him. An aqueous infusion is said to be used by the native Mexicans as a general tonic.

NEW REACTION OF IODATES.

Apropos of M. Corne's note on this subject, of which a short abstract was given in our last number (p. 41), M. Pollacci ‡ says that the experimenter is in error in referring the reaction to phosphorous acid solely, for phosphorus itself readily reduces iodates. Further, he says that the acids of phosphorus, formed at the ordinary temperature by contact of the element with water, have no reducing property so long as they are free from phosphorated vapour. This statement is supported by experiments in which phosphorus wholly or partially under water was exposed for some time to the air. The liquid poured away from the phosphorus was without action on a solution of iodate, but immediately on the introduction of a fragment of the element brown points appeared on the surface of it, which gave the characteristic blue colour with starch paste. The results are still more conclusive with amorphous phosphorus: with an iodate and water the reaction is instantaneous and tumultuous—it would be even dangerous with a large quantity of the iodate. M. Pollacci concludes from these and other experiments that the action is direct between phosphorus and an iodate, and does not follow on the formation of phosphorous acid.

THE LIFE AND WORK OF LIEBIG.

A course of lectures has recently been delivered before the Society of Arts by Dr. J. L. W. Thudichum, "On the Discoveries and Philosophy of Liebig, with especial reference to their influence upon the advancement of arts, manufactures, and commerce." In this and a few succeeding numbers we shall reproduce Dr. Thudichum's very interesting memoir:—

Lecture I.

Introduction.—General Sketch of Life and Labours.

The science of the present age is distinguishable from the learning of past ages by many important features. By these it has indeed somewhat altered the sense originally attributable to its name, and science has become a word of greater precision, and therefore of a less broad significance than what may be termed mere knowledge. This is so little understood that when lately a great statesman and orator met some of his constituents in a south-eastern suburb of this metropolis he informed them, amongst other things, that science was merely another term for knowledge. Even if it had been so originally, and the Latin word *scientia* had been merely the equivalent of the Saxon word knowledge, it would have to be admitted that the relations have changed by one of those conventions which are silent and convenient. We hold that the systematic enunciation of mere knowledge is doctrine; that science is a kind of knowledge, but that not all knowledge is science. Science is that kind of knowledge the correctness and truth of which can be proved by evidence convincing to all healthy understandings. Science is a series of potentialised axioms, which when once mastered are as evident as the simple axioms in mathematics, which are said to be so self-evident as to require no proof. By this definition a very large amount of human knowledge or doctrine is at once excluded from the domain of science. The learning of past ages was mainly imitative, little observant of new phenomena. Those ages had too much work on hand, first in the development of their languages, in which they used imitations countless in number, next in the shape of securing the conditions of social life in the form of communities and states. But even where these may be said to have been secured, *e.g.*, at the height of power of the Roman Empire, science was not developed, and it may be said that this absence of scientific treatment of the common problems of life has been one of the principal causes of the downfall of that and of many other States. Famines, epidemics amongst men and cattle, and wars, are made possible or necessary only by the absence or faulty application of the principles taught by science. Science, by teaching that, and how, these evils are to be avoided, has a field in this generation, of which the past had not even a distant conception. Imitative learning shows itself mainly as art, buildings, sculptures, paintings: all the mass of temples and gods which fill the world's history and imagination are of this kind. There is no science about a Greek or Egyptian temple, simply because there is no value in it; it does not satisfy, to our present mode of thinking, one single demand of the understanding. There is no science about our present homes, or how could they get filled with sewer gas, be devoid of arrangements for ventilation, and have square chimneys. Architecture, so called, is not a science, but an imitative art, beautiful but blundering. Manufactures have, too often, been carried on with great disregard of science, with the result that either empiricism was for the time successful enough, or that the manufacture went simply out of existence. It is the same with commerce. These arts have worked by tradition, by prescription, by precedent. They all wait for an infusion of the scientific method, the method of principle based upon natural laws immutable and indestructible. While not often scientific themselves, these branches of human knowledge, administering all the time, for a consideration of gain to be paid by the recipient, to important human wants, have yet indirectly advanced science by either finding and bringing, or by producing some of its materials.

Antiquity, then, possessed no science, except alone the results of meditation, which have been termed metaphysics, and which, if allowed to include ethics and logic, have no doubt attained in the treatment of philosophers a high degree of development. The contemplation of nature, however, in its inorganic and organised shape, and of the causes determining all motion and development, was not greatly developed. The power of distinction, the mother of all knowledge, was not applied to all things, and consequently they termed a process such as fire an element, and allowed some all-pervading material to exist under the name of the quintessence. Bodies fell to the ground because they possessed weight; but that the falling was a reciprocal action between the earth and the body falling upon it escaped their observation, and was only found by science.

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* *Amer. Journ. Pharm.*, February, 1876, p. 56.
† *Pharmacist*, February, 1876, p. 34.
‡ *Journ. de Pharm. et de Chim.*, March, 1876, p. 178.

Mere observation is not science, but only the beginning of science. When a person sitting in the railway train beholds the travelling shadow, he makes an observation. He begins a scientific inquiry when he asks whether the shadow travels as quickly as the train, so as to be in a line falling from the sun past the train, or whether the shadow is not a little later. If once the question has arisen, it is immaterial where it is solved, whether upon the railway train, or the satellites of Jupiter—the question must lead to the idea that light requires time for travelling; exact science determines this time by measuring space. Science began its development with the elucidation of celestial phenomena, and became astronomy, or the doctrine of the laws according to which heavenly bodies move. Copernicus is from this point of view the father, the creator of science. Kepler, Galileo, and Newton reduced the observations of these phenomena to expressions of regularity, which we call laws. The method, once found, was applied to other branches of knowledge; then arose the physiology of the animal and vegetable world, based upon anatomy as a science. Harvey made physiology a science, and so on in all branches of knowledge.

Now, let us see what was the method by which these results were obtained. Meditation had of course the inciting share, but furnished no materials. Observation accumulated the materials of which reflection might weave a tissue, the test was experiment. If from a knowledge of conditions a result can be predicted, then there is certainty. Such certainty is science; it consists of observation, meditation, knowledge of conditions, knowledge of their results, and therefore of the connection between results and causes: these, being regular, immutable, within the time accessible to our perceptions, and coercing everything under their sway, are called natural laws.

Of science, it is allowed that no part comes out of the human brain alone, not even the ideas of God and Immortality, which Kant claimed as innate ideas, while allowing all others to be the result of observation and reflection. The celebrated joke, that if an Englishman and a German were asked to produce a camel each, the Teuton would evolve one out of his inner consciousness, while the Briton would produce a camel of flesh and bone, is a good satire upon innate ideas. Science did not progress until it rejected all innate ideas or phantasies, and applied itself deeply to its proper methods, to observation, to meditation on the correlation of forces, and to experiment. Work, work, and again work, were the three main features of its success. The search for the philosopher's stone, for the medicine that should make young, healthy, happy, and rich, was also work, enormous in amount and extension, but it was not based upon observation. It left results which science gathered, the main result being that we cannot prolong our lives forward, but we can, as Kopp has beautifully said, prolong them backwards indefinitely, and see the changes of enormous spaces of time pass before our admiring eyes and mind.

There are three kinds of history, that of our planetary system in the theory of Laplace, that of our earth in geology, that of living things in the theory of Darwin. No serious person doubts now that the teachings of geology deserve the title of an exact science, and that compared to its coercing character upon the mind of man the convictions derived from written history are feeble in the extreme, and all contradictory writings, however old, mere nullities. The youngest of the sciences or the youngest branch of science is chemistry, founded by Lavoisier and Dalton; developed by thousands of clear heads and nimble hands, it has in half a century become a recognised power in the affairs of man. It has materially improved his estate, and enlarged his mind to conceptions of an elevating nature; it has become a ready test of his reasoning and working power. It has become the handmaid of almost all the elder sisters—of astronomy, teaching the composition of distant stars; of geology, teaching the composition and changes of strata and minerals; of physiology, vegetable and animal, teaching about food, nutrition, growth, changes, death, and decay; of the healing art, teaching the nature of evils in the shape of disease, and the means of curing or mitigating them. This science, too, was developed by work, work—physical and mental; its ways were often rugged; its endeavours misapprehended, opposed, suppressed. And the great men whose names are inscribed upon the roll of its principal promoters will be considered by posterity as benefactors akin to Hercules, removing evils, establishing the good and true. If we cannot now inscribe their names and likenesses amongst the stars, and transfer them to an Olympian abode, yet we can honour them by admiring their works and lessons, by sharing and continuing their work, by, as it were, living their lives with them over again, and thus prolong their memory forwards while we prolong our own in the inverse direction. We ought to honour them out of gratitude no less than out of the desire to benefit continuously man's estate. Such feelings have been instrumental in the cases of those who described the greatness of your Davy, of your Faraday. Such feelings shall now be the guiding principle in the consideration of the life, works, and philosophy of Justus Liebig. Lest the subject suffer by my imperfect treatment, I shall endeavour to keep closely to the subject which it is capable of raising. But I must beg you to understand that I shall proceed by a severe process, that of analysis, for nothing less than the results of analysis of work done can establish as proved what many feel as a sentiment. You will understand both the censure and the acclamation of what we will call the world; you will see the necessity for a reform in the philosophy of many of us; you will see how the life and labour of one man has produced vast applications and industries, improved or created a large commerce, and enhanced or engendered art; how it has soothed the pain and anguish of hundreds of thousands under the most severe trials of human organisation, and how it has left a growing harvest in the hearts and minds of men all over the world.

Justus Liebig was born on May 12, 1803, at Darmstadt, in the Grand Duchy of Hesse. His father was what in this country we should term a wholesale druggist and drysalter, a trade which is in Germany designated by the name of materialist. There is no doubt that the opportunities which he had of collecting chemical reagents and of witnessing the preparation of many products which were the objects of his father's trade, early excited in him that curiosity which soon became an insatiable thirst. It is related on creditable testimony that at the age of fourteen years he had performed all the experiments of which he could get knowledge from books, or for which within his means he could obtain the materials, and it is related by himself that about that time there was not a work in the library of the Grand Duke of Darmstadt on chemistry which he had not read. Looking at his early days by the light of that information, we cannot doubt that the anecdote ordinarily told of his having been a dull boy is a mere mistake. He was abstracted by other pursuits, and therefore, no doubt, neglected his school work, but that he should have been less gifted than others cannot, under the circumstances, be believed. It is related by a credible person that in 1817, when he and his school-fellows were speaking to each other as to what pursuit they were to select, he said that he was going to be a chemist, whereupon the other boys laughed at him and told him he was a great fool, for a chemist was nothing. However, times have changed, and what at that time was considered as no pursuit is now an honoured profession.

In the year 1818 he gave a distinct direction to that early bent of his mind, and he followed almost the only way which at that time existed in Germany for studying chemistry; he became an apprentice in an ordinary apothecary's establishment. An apothecary in Germany is a more scientific person than perhaps many would believe. He has had a thorough training, he has passed examinations, and he represents, therefore, the scientific side of chemistry, pharmacy, and the science of drugs in perfection. To such an apothecary, residing at Heppenheim, near Darmstadt, Liebig went, and remained there about ten months, but in that occupation as an apprentice his mind soon became wearied: he saw that he could not attain his object, and when, while continuing some of his early experiments on the fulminates, on one occasion he had the misfortune of producing a great explosion, this fact quickly terminated his apprenticeship, and he returned to Darmstadt. These explosions in the early days of great chemists are not uncommon. It is related in the case of Scheele, that when he was apprenticed to an apothecary, he once had a great explosion, in consequence of which his landlady expelled him from the house.

Liebig returned to his father's house in the year 1814, and read for six months in order to prepare himself for visiting the University of Bonn. He there listened to the lectures on theoretical chemistry of the well-known Professor Kastner, and he also studied the other natural sciences and some languages, and what is very characteristic of his great genius and perseverance, he formed a society amongst the students for the purpose of teaching one another, and for discussing subjects connected with chemistry and physics. Kastner being called to Erlangen, Liebig followed him there, and we are told that there he read all the new chemical publications, established another students' society for the same object as the first, and made many friends amongst the students, of whom several continued that friendship up to their death. Thus the celebrated poet, Count Platen, corresponded with him to the time of his death in 1830, and of this friendship we can see many congenial influences in the writings of Liebig, for there is no doubt that in his "Familiar Letters on Chemistry," the language, although always prose, frequently rises to the highest beauty, such as can only be produced by a mind of a poetical turn. The same influence of the classical period of German literature you will also perceive for example in the writings of Humboldt, particularly in his "Views on Nature," which are therefore considered as examples of classical German diction. Liebig also made the acquaintance of Bischof, the botanist, and of Engelhard, later Professor of Chemistry at Nuremberg. He went in for the severe study of what at that time was called philosophy, that is, he listened to the lectures on metaphysics and philosophy in general, of the then great Schelling. Now, let me give you the words of Liebig on that period of his life. He says: "I myself studied for some time in a university where the greatest philosophers and metaphysicians of the century carried the studying youths away to admiration and imitation. Who could at that time resist the infection? I, too, have lived and participated in this period so rich in words and ideas, so poor in true knowledge and solid studies: it has robbed me of two precious years of my life. I cannot describe the terror and dismay which I felt when I awoke from this giddy dream to consciousness. How many most gifted and talented men have I seen perish in this vertigo, how many wails about life objects completely missed have I been obliged to hear afterwards." Thus he spoke in his work on the study of the natural sciences, which was published at Brunswick in 1840.

Now, in order that you may be able to apprehend what this kind of philosophy was, and to understand more fully the position from which he had to emancipate himself, even at that early time of his life, I will quote to you a very few passages, and I will make them as short as possible, compatible with illustration, from one of Schelling's works, from the periodical for speculative Physics—mark the term "Speculative Physics." I will quote the following passage: "Nature strives in the dynamical sphere necessarily to absolute indifference, not by magnetism nor by electricity is represented the totality of the dynamical process, but only by the chemical process. With the third dimension of the product the two other dimensions are opposed. In nature itself there is one and inseparate, what is separated for the purpose of speculation." That is almost enough, but I will give you another passage which will be more striking because of the contrary itself being known to you. Here he says of the composition of water: "Water contains just the same as iron, but in absolute indifference as yonder in relative indifference, carbon and nitrogen, and thus all true polarity of the earth is reduced to an original south and north which are fixed in the magnet." Now in order that you may believe that he did not merely speak of an admixture or impurity of carbon or nitrogen, but that he meant to say that it was the essence of water, and that it was really composed of these two elements, and not of any other, he goes on to say: "The animal is in organic nature the iron; the plant is the water, for nature begins with the relative separation of the sexes, and then ends in this separation. The animal decomposes the iron, the plant decomposes the water. The female and the male sex of the plant is the carbon and the nitrogen of the water." These are two examples of the philosophy of Schelling, which was believed at that time to be the science by which Germany could be regenerated, by which the generation which had then only just recovered its independence would be put on a firm mental basis. The followers of this system were called to the Court of Prussia, and there Hegel, the philosopher, continued in a similar manner to teach doctrines which nowadays seem to be but a farrago of nonsense. Hegel says, for example, on the chemical process:—"If electricity was the broken magnetism, because the opposite poles are independent bodies upon which the positive and negative electricity is distributed, and if the point of indifference is the explosion of an indifferent light by itself, then is the chemical process, on the other hand, the totality of the shaping. We have two independent bodies which belong more to the one or the other extreme; to the metal on the one hand, or the sulphur on the other, which meet in an indifferent medium, and by abandoning their abstract one-sidedness in which they decompose the medium combine to a third body which is the totality and the neutrality of the opposites, the dynamical process in its highest perfection."

When a young man of seventeen or eighteen years of age is capable of freeing himself from the trammels of such a chimera termed philosophy, which had taken such a deep hold of a whole nation as to cause to flock to the university where it was taught the selected youth of the whole country, you may give him credit for great power of mind and for great independence of judgment. Do not forget that this development of the philosophy of Schelling and Hegel was a consequence of the latter part of the philosophy of Kant. Kant's philosophy was great as long as it was based on the exact sciences, upon physics, and upon mathematics, but when he left that basis and went into the speculative philosophy he gradually went away from that basis which had made his early philosophy so sound and so full of meaning for the perfection of the human understanding. On the other hand, when you come to a further development of the same philosophy, namely, that of Fichte, there the speculative part vanishes entirely into insignificance, because that which Fichte taught was not such kind of nonsense as that which I have read to you, but it was a kind of moral philosophy which spoke to the youth of Germany, and taught them this one great proposition, which everyone of them ought to feel, and which is the first condition of self-consciousness in man, namely, "I am I." This was the great teaching of Fichte, by which he brought home to men their own value and their own powers, which cannot be said was the result of the other philosophy from which I have quoted.

In 1822, Liebig, having emancipated himself from this kind of teaching, took the degree of Doctor of Philosophy at Erlangen, when he was nineteen years old. In the autumn of that year he returned to Darmstadt; his researches and endeavours then became known, and he attracted the attention of the Grand Duke Ludwig I., of Hesse Darmstadt, who conferred upon him a State stipend, to enable him to continue his studies at Paris. To Paris, therefore, he went. Now let us for a moment consider what was then the condition of chemistry at Paris. Lavoisier, the great reformer, who had established what was then called the anti-phlogistic chemistry, had thirty years before died on the scaffold; Guyton de Morveau, Fourcroy, and Berthollet, whom the first Napoleon called the *plus brave des Français*, because he gave him chlorate of potassium, by which he hoped to overcome the want of nitre for his gunpowder; the great Société d'Arcueil, which worked through the whole of the war times zealously at science, and published its memoirs; all these men had passed away. But there remained their disciples in the persons of Proust, Chevreul, Vauquelin, Gay-Lussac, Thénard, and Dulong. Chevreul is the only one of these celebrated men who now lives, and he has lately published, in the *Comptes Rendus*, a very remarkable paper on the changes which are produced in the power of thinking and observing by age. Fourcroy, the great animal chemist, who, in connection with Vauquelin, laid the foundation of that physiological chemistry, on which the modern science is based; then Gay-Lussac, Thénard, and Dulong, men of the new science, who continued the work in a most glorious manner which in this country had been carried to such a glorious issue by Humphrey Davy—these men were at that time teaching at Paris, and at the laboratory which the liberality of the first Napoleon and his envy of English discoveries had established at *L'Ecole Polytechnique*. They continued to study and shape the new science which was destined to give to the modern science of chemistry precision.

Liebig then worked with Thénard, listened to Gay-Lussac's lectures, and he met there the young German chemists, Runge. well known by his many researches on tar and the tar products—Misterlich, the discoverer of isomorphism and polymorphism—and Gustav Rose, the representative of the perfection of analytical and inorganic chemistry. In 1823 he brought his first paper on the fulminates of silver and mercury before the Academy. And now let me quote to you what he says of that event in the first work which he ever published. In the preface, which is a dedication to Alexander von Humboldt, he says that at the meeting of the Academy on July 28, 1823, he had read his paper, and was just engaged in packing up his apparatus and preparations, when a man, one of the members of the Academy, approached him, entered into conversation with him, and in an incredibly short space of time knew how to elicit from him all his hopes, schemes, and intentions. He did not dare to ask, either from shyness or from accident, who the gentleman was who spoke to him, and he disappeared again amongst the Academicians. But he says, "From that day all the doors of society and of all institutions were open to me. I did not know until many years afterwards to whom I owed this introduction and favour. It was to Humboldt, who had so well recommended him to the great French chemists, that Gay-Lussac, who never took any pupil whatever into his laboratory, accepted him as his only pupil, and, more than that, joined with him in his continuation of those researches which at that early age he had brought to such perfection. This preface is beautiful in its conception and feeling, and has been printed in all the seven editions of the work which have since been published. If there were time this would perhaps be the place to show the wonderful influence which Humboldt has exercised upon the science of all countries; how he everywhere endeavoured to attach the talents, to perfect their welfare, to introduce them into good positions, to make them teachers or workers; how he everywhere supported attempts and doctrines, down to the very end of his long life; and I might, for example, quote the remarkable influence which he had in establishing, through and with Col. Sabine, the magnetic observatories which this country has so splendidly arranged in various parts of the globe; but I see time passes so quickly that I must pass over that subject and continue the account of Liebig's life.

Through the recommendations of Humboldt and Gay-Lussac, both of which were addressed directly to the Grand Duke of Hesse Darmstadt, Liebig was, at the age of 21 years, by the supreme will and absolute power of the Grand Duke, appointed first Professor of Chemistry in the University of Giessen. A new chair was established for him, and as a laboratory he received a room, as he expresses it, with four walls. Great was the opposition against this new professor; for what was chemistry? Chemistry was no science, nobody knew anything of chemistry, nobody would have it. Moreover, the appointment had not been made in the regular way, therefore the whole of the authorities of the University set themselves against it. The consequence was that the majority of that University persecuted that man for 27 years; and no matter what was his reputation, the amount of his work, or the importance of his position, for 27 years this man could never once be made Rector of the University of Giessen. But where are the opposing influences now? History will not mention their names. Their Ultramontane participators tried to decry the great man as an atheist and materialist, and by that means to remove from him the assistance of the State, and to diminish his chance of gaining a living. But he was too strong for all of them. In the year 1826 he was appointed Professor in Ordinary, a promotion by which he became a fixed servant of the State and a fixed member of the University. In that year he married Henrietta Moldenhauer, a most amiable lady, who now survives him.

Now comes the period of work which lasted to the year 1834. The work itself I will not now enter upon, but we will, in the future lectures, see what was the nature of that work. We will perform before your eyes some of those operations by which that work has become of the utmost importance to mankind at large; and you can then see how, from a small point, there can be a light shed upon the largest problems of science.

In this year, 1834, however, Liebig fell ill from overwork and anxiety. A portrait which was taken at that time by the now deceased painter Engel, gives evidence of that, and I remember that the late Professor Zamminer told me that he had seen Liebig about that time taking short walks in the evening air, looking pale and haggard, like a man in a consumption, with little spots of hectic on his cheeks, and that his friends were afraid he would soon die. At that time he retired from Giessen for a time, and went to Baden Baden in the hope of recruiting his health. The patience which he had exercised for many years under the most narrow arrangements then gave way, and he asked for the building of a new lecture room, the arrangement of a proper laboratory, and for an increase of salary. All was refused by the narrow-minded Government of Hesse Darmstadt, through that close-minded man, the then Chancellor, Von Linde. Then Liebig wrote to Von Linde a letter, in which, after the introduction, he continues thus:—"I should have gained some convenience by these arrangements, but they were not intended for me personally; they would have been of lasting value for the University, and would have secured to the chemical chair an advantage over all others in Germany. For the institutions of a University the largest sums may be expended, for this increases the respect and affection for them; but the suitable employment of these sums must be strictly controlled. The sums are there, but they are used in an intolerably ridiculous manner. I must be certain of what I may have to expect at Giessen. If driven to extremities I shall not return there this winter, whether I obtain leave or not. I shall know how to justify this step, for no one has been maltreated in the University in a more conspicuous manner. One cannot live at Giessen upon a salary of 800 florins. Four years ago I, in conjunction with four colleagues, asked for an increase of salary; it has been refused. You (the Chancellor von Linde) have assured me with smiles that the State treasury had no funds; from this I saw that you have never known grief and torturing care for the daily bread. From the moment of that refusal I have endeavoured to acquire an independent position by ceaseless work; my exertions have not been without success, but they have surpassed my strength, and I have become an invalid; and if now, when I do not require the State any longer, I consider that, with a few miserable hundred florins more, my health need not have suffered in former years, because my life would have been more free from care, the hardest thought for me is that my situation was known to you. The means which the laboratory possesses have been too small from the beginning. I had four walls given to me instead of a furnished laboratory. Notwithstanding my requests, no sum for furnishing the same, or for buying apparatus, has been provided. I required instruments and specimens, and have been obliged to spend on these items annually from 300 to 400 florins from my own means; besides the famulus paid by the State I required an assistant, who costs me 320 florins—deduct both expenses from my salary, and there remains not enough to clothe my children. From this original treatment of the laboratory, the consequence has arisen that it possesses no property, for I can show that the arrangements, fittings, instruments, specimens which have made the Giessen laboratory—I can say it without blushing—the first in Germany, are my property. I will say nothing more about myself—my account with Giessen is closed. My path is not the one of reptiles, the easiest though the dirtiest. What I have said will suffice to justify with the ministry and the Prince my resolution not to lecture at Giessen during this winter (1834-35). If I am in health, I may not lack the power to establish a kind of university for my branches of science at my own risk. If I am not permitted, and if I receive my *congé*, this will free me from the charge of ingratitude towards the country from the means of which my scientific training has been possible. I have learned to bear much injustice, many a false judgment, but this reproach of ingratitude would be too heavy for me to bear." This letter pictures to you the conditions which prevailed at Darmstadt, but it is still more important, because it shows that such strong language was required to bring down the ministry, and that which no kind of friendly representation had been able to effect, this threat did. In 1835 he had to take compulsory repose. I find in the list of his publications only three small papers dating from this period, of which one only was a research, but in almost every other year there were from 10 to 20 researches and publications.

In 1836 another active period begins. In that year there were nine researches by himself alone, thirteen by himself and Pelouze. In 1837 there were nine researches by himself and five with Wöhler, including the celebrated one on lithic acid, and two with the celebrated French chemist Dumas. In that year the British Association for the Advancement of Science, at their Liverpool meeting, made a request to him to write a report on the then state of knowledge of organic chemistry. It was this report which originated the work which he published in 1840, namely, the work entitled "Organic Chemistry in its application to Agriculture and Physiology." In 1838 he published a memoir on the state of chemistry in Austria, in which he exhibited its shortcomings in trenchant language, and the effect upon the Austrian Government was such as no one would have expected. In reply to his essay he received the offer of a chair at Vienna. "Come to us," they said, "reform our chemistry, and we will give you a chair.'

But the conditions were not sufficient, and the Austrian Government, having received Liebig's refusal to go to Vienna, at their own expense sent a number of young chemists to Giessen, there to study chemistry under Liebig, and to prepare themselves for the important function of becoming teachers of the new chemistry in Austria. In the year 1840 he published the work which I have already mentioned, and he also published a memoir on the state of chemistry in Prussia. You know what was the state of Prussia in 1840; the promises made by the King in the year 1813 regarding a liberal constitution had all been falsified: a narrow-minded bureaucracy governed everything, a minister of education who did not comprehend his time, could not understand that physical science required any promotion, or any State help. He soon went into that movement which has been described as *muckerthum*, a kind of pietism which shows itself by casting up the eyes in a praying attitude, having God more on the tongue than in the heart; by a mock modest morality which would, for example, have caused the Council of this institution to have those beautiful nymphs on our walls painted over with drapery. Under these circumstances no science could progress, and there was not in the whole of Prussia a single establishment, laboratory, or teaching room, where a man could learn practical or even theoretical chemistry. It was the great boast of even talented teachers of chemistry that all the apparatus they required for teaching was a dozen test tubes. This attack on the state of chemistry in Prussia had no effect whatever of a good kind, but, on the contrary, the bureaucracy used its power and influence to prevent the Prussian youth from visiting the University of Giessen, and I have the authority of Kolbe that for a time the visiting this University was actually forbidden to young Prussians.

About this period Liebig purchased from the municipality of Giessen a sand-pit, at a place called Trieb, on a little height east of the town, and there he made experiments on vegetable physiology. This place bears the name of "Liebig's Height" to the present day, and I daresay it will bear it for many years to come. He also published his work on "Chemistry in its Application to Physiology and Pathology," which he dedicated to Berzelius. In 1844, appeared his first "Familiar Letters on Chemistry," in the *Augsburg Gazette*. These letters were afterwards published, with many new ones, from time to time in several editions, and by this means he contributed greatly to make chemistry popular, while still keeping it in the most scientific form needful. In 1850 he published a pamphlet on spontaneous combustion, on the occasion of the death of the Countess Görlitz, who had by experts and doctors at Darmstadt and Giessen been declared to have perished from spontaneous combustion, but it was afterwards found out that she had not perished in that way, but that she had been murdered by her butler, and afterwards burnt. About this time also Liebig effected a reform in the medical studies and examinations in the University of Giessen, and this reform was so important, and effected by so great a participation of public opinion, that we see there how great was his power, although in the University itself he was kept out of office as far as possible. These reforms amounted to nothing less than this—complete liberty of study. You know that in this country medical students have no liberty of study; they are obliged to attend lectures, to have heard at least two-thirds of the lectures given, and if it is not certified by the beadle, who comes in to every lecture and takes the names of all present, that they have been present at two-thirds of the lectures, they are not allowed to enter for the examination. This state of things also existed in the German universities previous to this reformation. At that time, however, this was completely done away with, and every student was allowed to obtain his knowledge where and how he pleased. He was not obliged to enter any university whatever, but he was obliged to pass an examination, and to pass that examination publicly, an examination which should so thoroughly test his knowledge that after he had passed it there could be no doubt whatever about his fitness to follow his profession. Now let me recommend to your attention this most remarkable system of public examination. The remarkable effect it had on the University of Giessen was this, that whereas formerly many students, coming unprepared, were rejected, since the introduction of public examinations few rejections have taken place, because the students take great care to get up their subjects and to come so fully prepared that in the presence of their countrymen, in the presence of any person who likes to enter the hall when the examination takes place, they can show that they are fit to follow their profession.

In the autumn of 1852 Liebig left Giessen, having received a call to the University of Munich, where the then King Maximilian was desirous of following his father, Ludwig, on another path of glory. Ludwig had made it his life business to restore art in Germany and raise it to a high footing in Bavaria, and Maximilian now wished to do the same thing for science in general, and he therefore endeavoured to collect from all parts of Germany the best men whom he could attract. One of these was Liebig, the King having made him President of the Academy, with the condition that he should undertake no laboratory teaching; that he should deliver lectures only, and at the same time be the curator of the Botanical Gardens. In that position he remained up to his death, devoting himself mainly to the public part of his duties, which he performed with grace, honour, and glory, and in the laboratory which had been constructed for his own immediate wants he only performed such analyses, partly himself and partly by a number of assistants, as were necessary to give him the data for the publication of his several works.

At last, in the year 1873, on April 18, he died, nearly 70 years of age, and in full possession of his faculties, not having, as other philosophers have had the pain of doing, experienced any diminution of his mental powers.

A few words as to his personal appearance. He was impressive, solemn; his hair was dark; his features strongly cut; his look was piercing. His voice was somewhat low, but highly impressive. His lectures were most attractive. I remember now the intonation and nature of his eloquence, which had very few oratorical efforts at enforcement, except those which consist in repetition, and the repetition would take place at the end of important sentences. The lectures which he gave were rich and instructive; and, in fact, he sacrificed, I may say, on the altar of his lecture-table, such a vast amount of his own money that I remember Professor Bischoff, the anatomist, now of Munich, saying, in a lamenting voice and tone, "Professor Liebig will die a poor man; he spends everything upon this laboratory and upon these lectures." The audience in the lecture-room was always very attentive. By eleven o'clock every seat was taken, every available standing place was filled down to the door-steps, and just in front of the lecture-table there were always a few chairs occupied by distinguished strangers or foreigners. These were the only lecture-rooms which in my life I remember to have seen from the beginning to the end of the session as full as they could be. For an hour and a-half everything was attention, everything went on in the most wonderful manner; at the end there was a tremendous ring of applause, and you saw the Professor disappear through a little door to his laboratory, there shortly afterwards to resume his teaching, and the continuation of those researches which were carried on by his pupils. In his laboratory teaching he knew how to attach men to him. He encouraged them to overcome difficulties, and if you look into the nearly 200 volumes of the journal entitled *Annalen*, which he has established, you will see the enormous number of works, not only by himself, but by his pupils, which I believe would altogether reach to more than one thousand; his own contributions being upwards of three hundred. He established what may be called the first school of complete chemical analysis, upon a new system, namely, that a person who wants to know chemical analysis must perform it himself upon the articles placed before him, he knowing nothing of them; and it is only by a practical acquaintance with the processes that the student is able to appreciate that which he learns in the lecture-room from the professor. Therefore the one ought to go hand in hand with the other, and that is now the system adopted all over the world. Do not forget that Will, the successor of Liebig at Giessen, and Fresenius, who has been for many years at Wiesbaden, were many years his assistants, and that their works on analytical chemistry are the standard works on that science throughout the world. Of course, in their work is continued work which Liebig initiated. It is the same with numbers of researches connected with the names of Strecker, Fehling, Fleitmann, Gnckelberger, Hemeberg, Schlossberger, Döpping, Crasso, Engelhardt, Rochleder, Theyer, Schlosser, Schleiper, Sthamer, Haidlen, Bensch, Von Bibra, Bopp, Enderlin, Redtenbacher, Varrentrap, Playfair, Stenhouse, Brodie, Bromeis, Hoffmann, and many others of equal repute—all these men learnt and studied, and worked with him as his pupils, some afterwards as his colleagues; most of them were taken by him into friendship, which continued throughout the whole of their lives. Amongst these pupils there were but few Frenchmen. But perhaps that is redeemed by the fact that two of the most celebrated French chemists, namely, Pelouze and Dumas, worked with Liebig conjointly in some of his first researches. Liebig declined many other honourable calls to other universities, and in 1851 even made an attempt to improve the Giessen institutions by offering to remain if the town and Government would unite in improving conditions. However, nothing was done, and he left. Great surprise was experienced when, after Liebig had left, all the other celebrated professors left the University one after another, and it sunk in an incredibly short space of time to a very low state indeed. The State and University too late perceived their loss, which they did not foresee, because even then they did not appreciate the greatness and the world-wide fame of this man. He was made a member of many learned societies, besides being the president of the Academy, and was particularly connected with this society, in that it conferred upon him that which he wrote to me he considered one of the greatest honours of his life, namely, the Albert Medal of the Society of Arts. He wrote a letter to the president of our society, which I am sorry has not yet been published, and perhaps I may express a hope that after his Royal Highness shall have returned from his important visit to the East, he will allow us an opportunity of participating in the sentiments which this great man has expressed to our president in that letter. A monument is now in progress which will hand down his features to future generations.

(*To be continued*).

SAFFRON.

EITHER as a medicine, condiment, perfume, or dye, saffron has from a remote period been highly prized by mankind, and has played an important part in the history of commerce. It consists of the dried stigmas of the *Crocus sativus*, a native of Greece and Asia Minor, naturalised in many parts of Europe, and cultivated in Persia and Cashmere. It is a small plant with a fleshy bulb-like corm and grassy leaves, much resembling the common spring crocus of the gardens, but blossoming in the autumn. It has an elegant purple flower, with a large orange-red stigma, the three pendulous divisions of which are protruded beyond the perianth. The Greeks generally called this plant Κρόκος or Κρόκον, and Homer selects it for one of the four flowers that adorned the couch of Jove and Juno, which has led to the supposition that the exhilarating qualities of its blossoms were known to the poet:—

> Thick new-born violets a soft carpet spread,
> And clustering lotos swelled the rising bed,
> And sudden hyacinths the turf bestrew,
> And flow'ry crocus made the mountains glow.—*Iliad.*

The Latins named it Crocus, from a beautiful youth who was said to have been devoured by the impatience of his love for Smilax, but who was transformed by Hercules into a flower which still bears his name. By chemists, on account of its golden colour, it is called *Aurum philosophorum*; by others *Sanguis Herculis*, *Aurum vegetabile*, and for its supposed extraordinary virtues in many diseases it was honoured with the title of *Rex vegetabilium* and *Panacea vegetabilis*. The English word saffron is derived from *Zahafran*, the Arabian name for this plant, which is nearly the same in the French, Dutch and German languages.

The best saffron, Pliny tells us, grew in Cilicia, on a mountain called Corycus; the next in quality upon Mount Olympus in Lycia; and the inferior kinds were gathered at Phlegia, in Macedonia. The Sicilian was likewise held in repute at Rome, where, after being steeped in wine, it was used as a perfume and sprinkled about the theatres. The same author mentions that the crocus was never employed in garlands, but that a chaplet of saffron, when worn upon the head, allayed the fumes of wine and prevented inebriety; it was mixed in potations by excessive wine bibbers to enable them to drink more freely without intoxication. The Romans also used saffron in all inflammations, particularly those of the eyes, and it was considered a remedy for ulcerations of the stomach, breast or liver, and was likewise given in coughs and in pleurisy. In India at the present day it is used in medicine as a colouring substance, and in domestic cookery. The Vytians prescribe this article in nervous affections attended with vertigo, and where there appears to be an approach to apoplexy by accumulation of blood in the head. They also believe it to possess considerable virtue in melancholia, hysteria, depressions, and Kistnah Dashum (typhus fever), in which last they suppose it to act as a cordial and restorative. To women, soon after the pains of childbirth are over, an infusion of saffron is frequently administered by the Tamil midwives to prevent fever, to support the animal spirits, and gently to assist in carrying off the lochia. It is, besides, used by the Indian practitioners as an external application in ophthalmia when mixed with a small quantity of pounded Myrobolun Chelmlic and lime juice, and applied round the eye, but close to it. The Arabians class it amongst their Mosebetal (Hypnotica), Mokewyat (Cardiaca), and Muffettehat (Deobstruentia). Used as a dye, a rich yellow-red colour is obtained, which, when dried and pure, is of a scarlet hue. Although the use of saffron is diminishing in Europe, all sorts of virtues are attributed to it in the East. With the Rajput warrior, to put on the saffron robe is the sign of "no quarter."

It is now imported into India both from Persia and Cashmere, but into the north-western provinces from the latter only. Dr. Falconer formed the opinion that saffron could be successfully cultivated in the Himalayas, at heights varying from 6,000 to 6,500 feet above the sea, and that if it were once brought into the market the demand for it would be almost unlimited. Saffron was an article of traffic in the Red Sea in the first century: it was cultivated at Derbend and Ispahan, in Persia, and in Transoxania, in the tenth century, whence it is not improbable the plant was carried to China, for, according to the Chinese, it came thither from the country of the Mahommedans. There is evidence to show that saffron was a cultivated production of Spain as early as A.D. 961; yet it is not so mentioned, but only as an eastern drug, by St. Isidore, Archbishop of Seville in the seventh century. As to France, Italy, and Germany, it is commonly said that the saffron crocus was introduced into these countries by the Crusaders. Porchairs, a French nobleman, is stated to have brought some bulbs to Avignon towards the end of the fourteenth century, and to have commenced the cultivation in the Comtat Venaissin, where it existed down to recent times. About the same time the growing of saffron is said to have been introduced by the same person into the district of Gâtmais, south of Paris. During the Middle Ages the saffron cultivated at San Gemignano, in Tuscany, was an important article of exportation from Genoa. That of Aquila, in the kingdom of Naples, was also famous, and was still distinguished in price lists at the beginning of the present century. The growing of saffron in Sicily, which was noticed by Columella, is carried on at the present day, but the quantity produced is insufficient even for home consumption. In Germany and Switzerland, where a more vigorous climate must have increased the difficulties of cultivation, the production of saffron was an object of industry in many localities.

The saffron crocus was most probably introduced into this country by the Romans, from their known attachment to this medicine, and the culture of it was discontinued on their leaving. The earliest accounts we have of its being cultivated in England mention that it was grown near a Roman road running through Essex. It is commonly said that saffron was again brought to England in the time of Edward III., and that Sir Thomas Smith introduced it into the neighbourhood of Walden. We find that the corporation of Walden bears three saffron plants in their arms. Their charter was granted in the third year of Edward VI., when it is most probable their arms were also given; and from this circumstance it may be presumed that the town, now called Saffron Walden, was then famous for the cultivation of this plant. Tusser, who resided in Essex in the reigns of Mary and Elizabeth, notices it in his "Five Hundred Points of Good Husbandry," as if it were planted by farmers in general as a part of their produce to be furnished to their landlords.

During the Middle Ages, when saffron was an important article in husbandry, the severest enactments were not only made, but were actually carried into effect, against those who were guilty of sophisticating saffron, or even of possessing the article in an adulterated state. Thus, at Pisa in A.D. 1305, the *funducarii*, or keepers of the public warehouses, were required by oath and heavy penalties to denounce the owners of any falsified saffron consigned to their custody. The Pepperers of London, about the same period, were also held responsible to check dishonest tampering with saffron.

In the year 1550 Henry II., King of France, issued an edict for the express purpose of preventing such frauds, the following extract from which will show some of the methods employed to impose on the public in the sale of this article. "For some time past," says the edict, "a certain quantity of the said saffron has been found altered, disguised, and sophisticated by being mixed with oil, honey, and other mixtures, in order that the said saffron, which is sold by weight, may be rendered heavier; and some add to it other herbs similar in colour and substance to beef over-boiled and reduced to threads, which saffron thus mixed and adulterated cannot be long kept, and is highly prejudicial to the human body; which, beside the said injury, may prevent the above said foreign merchants from purchasing it, to the great diminution of our revenues, and to the great detriment of foreign nations, against which we ought to provide." The authorities in Germany were far more severe. A *Safranschau* (saffron-inspection) was established at Nuremburg in 1441, in which year 13 lbs. of saffron was publicly burnt at the Schönen Brunnen, in that city. In 1444, Jobst Findeker was burnt, together with adulterated saffron. And in 1456, Hans Kölbele, Lienhart Frey, and a woman, implicated in falsifying saffron, were burned alive. The *Safranschau* was still in vigour as late as 1591; but new regulations for the inspection of saffron were passed in 1613. At the present time saffron is often adulterated, but the frauds practised on it are not difficult of detection. Sometimes the falsification consists in the addition of florets of *Calendula* dyed with logwood; another method, much practised, and not always easy to detect by the eye, consists in coating genuine saffron with carbonate of lime, previously tinged orange red. If a few shreds of such saffron be placed on the surface of water in a wine-glass, and gently stirred, the water will immediately become turbid, and the carbonate of lime will detach itself as a white powder and subside. Saffron thus adulterated will freely effervesce when dilute hydrochloric acid is dropped upon it.

The true saffron crocus is that which grows and blossoms in the autumn, of a purplish colour and of a pleasant scent. At the proper season the owner of the fields collects a number of hands, who commence gathering the flowers early in the morning, and throw them by handfuls into baskets; the pistil shrinks when the sun becomes powerful, therefore the gathering is discontinued about eleven o'clock; and the flowers are carried to a building, where the stigmas and a portion of the style are carefully picked out, and the rest of the flower is thrown away. A mass of these stigmata, some inches in thickness, is placed in sheets of paper over a hair-sieve; other sheets of paper and weights are placed on the top, and the whole is roasted over a small kiln. This produces a cake of saffron, but that which is not so prepared, but merely dried in the sun, is the finest and is called hay saffron. The gathering takes place in fine bright weather, and used not to be stopped even on the Sabbath day, the infraction of the day of rest being permitted in this occupation. It is grown in Essex and Cambridgeshire. Saffron is also brought from Sicily, France, and Spain: the English is, however, the best. In France the flowers are collected at the end of September or in the beginning of October. The stigmas are quickly taken out, and immediately dried on sieves over a gentle fire, to which they are exposed for only half an hour. According to one of the chief authorities it requires 7,000 to 8,000 flowers to yield 500 grammes (17½ ozs.) of fresh saffron, which by drying is reduced to 100 grammes. Notwithstanding the high price of saffron, its cultivation is by no means always profitable, from the many difficulties by which it is attended. Besides occasional injury from weather, the bulbs are often damaged by parasitic fungi. The most considerable quantity is now produced in Lower Arragon, Murcia, and La Mancha, in Spain, and brought into commerce as Alicante and Valencia saffron. The quantity of saffron exported from Spain in 1864 was valued at 190,062*l.*; in 1865, 135,316*l.*; in 1866, 47,083*l.* The drug was chiefly exported to France. French saffron, which enjoys a better reputation for purity than the Spanish, is cultivated in the arrondissement of Pithiviers-on-Gâtmais, in the department of the Loiret, which district annually furnishes a quantity valued at 1,500,000 (60,000*l.*) to 1,800,000 francs. The cultivation is carried on by small peasant-proprietors.

In Austria, Maissau, north-east of Krouss-on-the-Danube, still produces excellent saffron, though only to a very small extent: the district was formerly celebrated for the drug. Saffron is produced in considerable quantity in Ghayn, an elevated mountain region separating Western Afghanistan from Persia. A very little is collected at Pampur, in Kashmir, under heavy imposts of the Maharaja. It is also cultivated in some districts of China. Finally, the cultivation has been introduced into the United States, and a little saffron is collected by the German inhabitants of Lancaster County, Pennsylvania. But in almost all countries the cultivation of saffron is on the decline, and in very many districts it has altogether ceased. It seems scarcely credible that Lord Bacon should attribute any sprightliness possessed by the English people to the liberal use of saffron in their sweetmeats and broths; and the old proverb alluding to one of a merry temper, "Dormivit in sacco croci," "He hath slept in a bag of saffron," seems likely to become obsolete.

THE RIGHT TO PRESCRIBE.

WHILE we are all wondering at the extraordinary interpretation of the Apothecaries' Act which Baron Bramwell has seen fit to make, it may be of interest to reproduce a law report from last century's archives, in which the right to prescribe was fought very vigorously, and from the result of which the apothecaries may date their present position. We take the particulars from Dr. Davies' "Unity of Medicine":—

The celebrated case of College of Physicians *v.* C. S. Rose gave to the apothecaries their first advantage. In the year 1703, C. S. Rose, being an apothecary by trade, was sent to by John Seale, then sick of a certain distemper; and he, having seen and being informed of the said distemper, did, without prescription or advice of a doctor, and without any fee for advice, compound and send to the said John Seale several parcels of physic as proper for his said distemper, only taking the price of his drugs.

The question was, whether this was a practising of physic such as was prohibited by the statute?

After this had been three several times argued in the Court of Queen's Bench, the judges were unanimously of opinion that the facts found did amount to the practising physic within the meaning of the Act, and gave judgment accordingly.

Hereupon a writ of error in Parliament was brought to reverse this judgment; and on behalf of the plaintiff in error it was argued that the consequences of it would not only ruin him, but all other apothecaries; as in case of the affirmance of this judgment, they could not exercise their profession without the license of a physician; that the constant usage and practice which had always been with the apothecary was conceived to be the best expounder of this charter, and that therefore the selling a few lozenges or a small electuary to any person asking a remedy for a cold, or in other ordinary or common cases where the medicines had a known and certain effect, could not be deemed unlawful or practising as a physician, when no fee was taken or demanded for the same; that the physicians, by straining an Act made so long ago, endeavoured to monopolise all manner of physic solely to themselves, and if they should succeed in this attempt, it would be attended with many mischievous consequences; for, in the first place, it would be laying a heavy tax on the nobility and gentry, who in the slightest cases, and even for their common servants, could not have any kind of medicine without consulting and giving a fee to a member of the college. It would also be a great oppression upon poor families, who, not being able to bear the charge of a fee, would be deprived of all kinds of assistance in their necessities; and it would prove extremely prejudicial to all sick persons, who, in case of sudden accidents or new symptoms happening in the night time, generally send for the apothecary, but who would not dare to apply the least remedy without running the hazard of being ruined. On the other side it was contended that by several orders of the college its members were enjoined to give their advice to the poor gratis, and that not only to such as could come to them for it, but every physician in his neighbourhood was obliged to visit the sick poor at their own lodgings; and therefore the objection, that if the apothecaries could not administer physic but by the prescript of a physician the poorer sort of the people would be lost for want of proper remedies, had not the least foundation. And when these orders were observed not to have their full intended effect, on account of the high prices which the apothecaries generally demanded for the remedies prescribed, whereby the poor were deterred from consulting the physician for fear of the charge of the physic, the college, by a joint stock, erected several dispensaries in town, where, after the physicians had given their advice gratis, the patients might have the physic prescribed for a third, and generally less, of what the apothecaries used to exact for it: by which expedient many hundred persons of mean condition received their cures at a very small expense, and without one farthing profit arising to the physicians: that in case of sudden and immediate necessity, not only apothecaries, but any other person, might do his best to relieve his neighbour, without incurring the penalty of the law; but there was no reason why the apothecaries, under that pretence, should be permitted to undertake at leisure all dangerous diseases, and especially where, as in this city at least, a skilful physician might be as soon had as an apothecary.

That in common or trifling indispositions the patients themselves were generally their own physicians, and would of course send for any medicine of which there had been common experience for their cure, and which the apothecary might lawfully make up and sell; but for the apothecary to be permitted to judge of diseases in their beginning, whether slight or not, and to order medicines for the same, would be both dangerous and more chargeable: dangerous, because the most malignant distempers usually begin with apparently inconsiderable symptoms, and are many days before they appear in their proper colours, and as apothecaries are not bred to have suitable skill, the management thereof ought not to be left to their judgment; and more chargeable, because, be the disease ever so slight, the apothecary will be sure to prescribe largely enough; and should he chance to mistake, then that distemper, which by the discreet advice of a physician might by one proper medicine have been eradicated at the beginning, runs out into great length, to the extreme hazard and great expense of the patient.

But, after hearing counsel on this writ of error, it was ordered and adjudged, that the judgment given in the Queen's Bench for the president and college or commonalty of the faculty of physic in London, against the said William Rose, should be reversed.

Correspondence

MR. CYRUS BUOTT.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

DEAR SIR,—Permit me to bring under the notice of your readers the circumstances of Mr. Cyrus Buott, who, now aged and infirm, is in such extreme distress that he and his daughter are wanting the bare necessaries of life.

Some members of the trade to whom the extremity of their affliction has recently become known have given some help, and I have little doubt that this sum for their immediate succour will be considerably augmented by the donations of those who at one time were connected with the society of which Mr. Buott was the secretary, and also of others, who though opposed to his views on pharmaceutical legislation, &c., could not but note the energy and ability he displayed in the days of the struggle that preceded the passing of the Pharmacy Act of 1868.

I shall be very pleased, on Mr. Buott's and his daughter's behalf, to receive any contributions and reply to any inquiries.

I am, dear sir, yours faithfully,

ROBERT HAMPSON.

205 St. John Street Road, London, E.C.

CONTRIBUTIONS PROMISED.

	£	s.	d.
Mr. S. C. Betty	1	1	0
" Elias Bremridge	1	1	0
" W. S. Brown	1	1	0
" D. Fraser	1	1	0
" Thomas Greenish	1	1	0
" Robert Hampson	1	1	0
" C. Hanbury	2	2	0
" Thomas Hyde Hills	2	2	0
" Gustav Mellin	5	5	0
" John Owen	1	1	0
" John Page	1	1	0
" George Patterson	1	1	0
" F. M. Rimmington	0	10	0
Mr. J. Robbins	2	2	0
" George W. Sandford	2	2	0
" John Williams	1	1	0
" A. C. Wootton	1	1	0
THE CHEMIST AND DRUGGIST	1	1	0

[We trust that many of our readers will support Mr. Hampson in the generous effort he is making to save from absolute want one who has been so widely known to the trade as Cyrus Buott. Mr. Buott is now 75 years of age, and he can no longer battle with the world. It has been a losing and a hopeless struggle that he has carried on for some years past, and now, with literally nothing left, he is compelled to retire from the contest. His most earnest desire is that he may still be able, as he always has done yet, to pay twenty shillings in the pound, and we are confident that those who can afford a small sum will help him in his extremity.—ED. C. & D.]

THE ACTION OF LIGHT AND AIR ON CHLORAL-CHLOROFORM.

[*Translation.*]

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—On page 42 of THE CHEMIST AND DRUGGIST I notice an editorial remark which commences with the words "This conclusion is not in agreement with the results first obtained and not, &c." On this I beg to make the following observations. Pure chloral-chloroform remains unchanged only *in vacuo* if it be exposed to light. Now, since under ordinary circumstances, as, for example, in the practice of pharmacy, even the purest chloral-chloroform is never preserved *in vacuo* (this condition can only be obtained by boiling the chloroform in a partially filled tube which is hermetically sealed after ebullition), it is always subject to the action of light and air, and to the consequent formation of phosgene gas. A small addition of alcohol retards the development of phosgene gas in pure chloroform thus exposed, but does not quite prevent it. Pure chloral-chloroform is indeed, therefore, "a body exceedingly sensitive to the action of light." Generally, the purer a sample of chloroform is, *i.e.*, the smaller the proportion of alcohol it contains, the more readily does it decompose under the influence of air and light.

56 Mittelstrasse, Berlin, N.W.: C. SCHACHT, Ph. Dr.
February 19, 1876.

[This letter, for which we tender our acknowledgments to the esteemed writer, adds force to the editorial remark that "air seems to be the one thing necessary to induce decomposition." We understand Dr. Schacht to mean that if chloroform is to remain unchanged on exposure to light it must be kept *in vacuo*; and it appears to us that however sensitive pure chloroform may be to light it is much more so to air, and probably more still to the combined action of the two.—ED. C. & D.]

VIVISECTION AND MODERN IMPROVEMENTS IN MEDICINE AND SURGERY.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—The kindness and liberality which has on former occasions induced you to insert letters of mine upon a subject in which I take a strong interest leads me to hope that you will find room for the following remarks upon a matter of infinitely greater practical moment—one which is not the concern of any medical clique alone, but is regarded as of supreme moment by every humane man and woman.

Certain medical and other periodicals, professing to base their assertions on the report of the Royal Commission appointed to inquire into the subject of vivisection, have lately sought to instil into the mind of the public a most exaggerated estimate of the actual practical benefits for the introduction of which medicine and surgery are indebted to vivisection. One daily journal, in particular, more conspicuous for its general political bias than for the literary ability with which it is conducted, found a welcome means of filling its necessitous columns by inserting a remarkably grandiloquent article on this subject, ascribing to vivisection nearly all the therapeutic and hygienic advantages we at present enjoy, and denouncing as "an enemy of his race" (*sic*) the person who should seek to rescue the lower animals from the scalpels of low-minded medical students and their instructors. Condescending to particulars, the eloquent writer favoured his readers with a thrilling narrative of the manner in which traumatic hæmorrhage used to be arrested by means of red-hot knives and boiling oil, contrasted this with the ligature now generally employed, and wound up by assuring the public that for the introduction of the ligature we are indebted to Harvey's discovery of the circulation of the blood, which discovery was due to vivisections. Warmed by so sublime a theme, a medical editor waxed at once even more rhetorical and specific, by informing us that "Harvey's discovery, almost entirely due to vivisections, bridges over the interval between the use of red-hot knives and that of the carbolised ligature." Let us see how far the well-known facts of history bear out these assertions.

1. The ligature, though employed by Celsus and the later Roman surgeons, fell into disuse until its re-introduction by the celebrated French surgeon Ambrose Paré, in 1560. Ambrose Paré was born in 1509, and died in 1590.

2. William Harvey, "the discoverer of the circulation of the blood," was born in 1578, eighteen years after the re-introduction of the ligature. Accordingly, at the date of the death of Paré, Harvey was twelve years of age. Now, there are many instances on record of unusual precocity displayed by men of genius. Goethe, for example, is said to have spoken six different languages when he was only six years of age, and St. Nicholas is stated to have acquired so early a familiarity with the canons of the Church that before he was weaned he conscientiously refused to take the breast on Wednesdays and Fridays until the evening, when, as is quite permissible, he indulged in a slight refection from that primitive source. If, therefore, Harvey had enjoyed the advantage of a course of physiology, with vivisections, at a "boys' or girls' school," as is now enjoined on the children of the nineteenth century by the author of a manual for such institutions which has lately reached its ninth edition, it would be rash peremptorily to deny that the promising infant *might* have instructed the aged Paré as to the nature and functions of the vascular system. But the difficulty would still remain as to how information imparted to Ambrose Paré subsequently to 1578 could have enabled that eminent surgeon to utilise the same for practical purposes 18 years before.

The difficulty thus raised is by no means lessened when we find that as a matter of fact Harvey said nothing whatever about the circulation of the blood until subsequently to his appointment to the Lumleian lectureship in 1615 (25 years after the death of Paré, and 55 years after the re-introduction of the ligature), and did not publish his researches on this subject until 1628 (38 years after the death of Paré, and 68 years after the re-introduction of the ligature).

3. By referring to the "carbolised ligature," the medical editor, as he is well aware, introduces into the discussion a matter which has nothing whatever to do with Harvey, vivisection, the circulation of the blood, red-hot knives, boiling oil, or any of the other sublime or horrible subjects of his very sensational paragraph. The introduction of antiseptics, with the various applications of the same, as the editor very well knows, was based on the doctrine of the existence of atmospheric "germs," a doctrine resembling that of the "Panspermatists," and having no reference at all to any theory respecting the circulation. For carbolic acid in particular we are indebted (*a*) to Runge, who discovered the same in 1834; (*b*) to Laurent, who first prepared it in a pure form in 1841; (*c*) to the further investigations of Squibb, Lemaine, and Crooks; (*d*) to Professor Lister, for the introduction of some of its best preparations, that of the "carbolised" animal ligature especially. The use of the "animal ligature" at all; *i.e.* a ligature of some such substance as cat-gut instead of silk, was first advocated by Dr. Physick.

4. By his own confession, Harvey did not derive the idea of the circulation of the blood from any vivisections whatever, but from a consideration of the valves in the veins, which permit the flow of blood in only one direction.

5. The proofs adduced by Harvey from vivisections, though no doubt furnishing strong presumptive evidence, were so far from being conclusive that they failed to convince some of the greatest anatomists of his own day, as Riolan, Wormius, &c.

6. Although, as a matter of fact, Harvey had recourse to vivisections for the purpose of demonstrating the circulation of the blood, these were not only unsatisfactory, but unnecessary. For in Harvey's time, and long before, the following facts were known:—*a.* The veins and right side of the heart contain blood; *b.* In all states in which they can be examined in the living body the left side of the heart and the arteries contain blood also; *c.* The heart and veins are furnished with valves which anatomy alone (on the dead subject) suffices to show only permit the flow of blood in one direction. Now, in former times it had been asserted that, although in all states in which they can be examined in the living body the arteries and left side of the heart contain blood, this was because the "spirits" (which were supposed to fill the arteries and left ventricle during life) escaped, of course invisibly, by the wounds necessarily inflicted on the arterial system during the operation, and the blood rushed in to supply their place. Clearly, the blood must enter by one of the extremities of the arterial system. If by the cardiac extremity, there must evidently be a communication through the septum between the right and left sides of the heart, which, except in a few very rare cases, was shown by anatomists not to be the case in adults (evidently this could only be shown by anatomy proper, not by vivisection); if by the distal extremity, there must be a direct communication between the arterial and venous systems, through which the blood must regurgitate from the latter to the former. The mere anatomical consideration of the structure of the valves in the veins shows such a regurgitation to be impossible; hence, it necessarily follows that, during life, the left ventricle and the arteries in their normal state contain blood. Nothing was then really necessary in order to complete the demonstration of the circulation of the blood (since there was no question as to its motion) but the proof of an actual channel of communication between the arterial and venous systems, and this was furnished, not by Harvey, but by Malpighi, four years after Harvey's death, who demonstrated the movement of the blood in the capillaries by means involving no vivisection whatever, viz., the examination of the web of a frog's foot under the microscope. A further demonstration was given by Lange in 1680, by the simple process of injecting the veins from the arteries in the dead subject.

Hence, we are not indebted to Harvey's discovery at all for the re-introduction of the ligature, which took place half a century before, and our obligations to vivisection for the discovery of the circulation of the blood are, at best, accidental, and very far from being complete. They will not be enhanced if we consider for a moment the views as to the vascular system which vivisection served to introduce and confirm in the minds of those who practised it most.

Erasistratus of Alexandria was one of the greatest anatomists the world ever saw. That he was not over-scrupulous as to the practice of vivisection seems probable from the fact that he and his colleague Herophilus vivisected six hundred men and women, with whom they were furnished for that purpose by the enlightened liberality of that eminently judicious and scientific prince, Ptolemy Philadelphus. (In order that this monarch may not lose any portion of the fame justly due alike to his keen moral sensibilities and rational patronage of science, I may remind your readers that he derived his ironical *soubriquet* of Philadelphus from the fact of his having murdered two of his own brothers, who stood between himself and the throne.) Now, let us listen to what Erasistratus learned from vivisection as to the circulatory system:—

"The *vena cava* is the receptacle of the blood and the arteries of the spirits (error No. 1). These vessels divide and subdivide, until the branches become so small as no longer to permit the passage of the blood (error No. 2). Thus, in the natural state, the blood does not enter the arteries (error No. 3). In diseased or abnormal conditions it does enter the arteries, and this is the cause of disease (error No. 4). When it only enters the extremities of the arteries, simple inflammation is set up (error No. 5). When it proceeds further, fever is caused (error No. 6). Traumatic fever arises from the sudden evacuation of the spirits by the wound in the artery, and the rushing in of blood to prevent the occurrence of a vacuum (error No. 7.)"

It seems, therefore, that the "bridge" which (according to a medical editor) Harvey's discovery has built between the use of red-hot knives and the introduction of the "carbolised ligature" is of a peculiar nature. Starting from a point where it had no existence (the abandonment of red-hot knives by Paré having preceded the doctrine of Harvey by at least half a century), it lands us in a quarter with which it has no connection (the use of antiseptics having nothing to do with Harvey's doctrines). To a frivolous mind this appears something like an "Asses' Bridge," and it seems strange that even a medical editor and a writer in the *Standard* should venture on a structure as unfounded as most of the assertions in that periodical's sensational leader.

Yours faithfully,
W. B. A. Scott, M.D.
16 Stonebridge Park, Willesden, N.W.:
March 2, 1876.

THE "DISPENSING QUERY."

[The query raised in our January number was whether, in the case of a prescription combining *potass. iodid.* and *sp. eth. nitc*, the dispenser is justified in adding a little alkali to the *sp. eth. nit.* in order to prevent the decomposition of the *potass. iodid.* Opposite opinions were expressed in our correspondence columns last month.—Ed. C. & D.]

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

Sir,—If any confidence is to be placed in a dispenser he should accurately compound all medicines according to the formula required or the prescription as written. No chemist is justified in the slightest degree in either adding to or taking from the ingredients contained in such prescription, no matter what amount of chemical skill he may bring to bear upon it. The 15th section of the Pharmacy Act, 1868, provides that any "person who shall compound any medicines of the British Pharmacopœia except according to the formularies of the said Pharmacopœia shall for every such offence be liable to a penalty of five pounds."

One of the characters of spt. ætheris nitrosi is that "it effervesces feebly or not at all when shaken with a little bicarbonate of soda." This shows that it may necessarily contain free acid, which thus becomes its proper constituent; consequently the addition of an alkali would alter its character and medicinal properties, and be a mischievous interference with its composition, without the slightest authority.

The prescriber, knowing its incompatibility with potassium iodide, evidently either wanted "the dark stuff" produced by decomposition of the iodide, or, upon his attention being called to the matter, showed a lamentable amount of ignorance. The first chemist acted most honourably towards him, and it would have been more creditable had he acknowledged his error and corrected his blunder, instead of dishonestly attributing the fault to the dispenser.

The prescription itself suggests no great amount of skill on the prescriber's part, for if he wanted a diuretic action he could have prescribed potassæ nitras with better effect than by decomposing the iodide, and knowing the disturbing influences upon the stomach of large doses of potassium iodide and alkalies, unless largely diluted, these would have been more satisfactorily administered in twice the quantity of water.

The quotation of "G. B. K." is foreign to the issue, but might be advantageously remitted to the prescriber for his special information, it being clearly his duty and not that of the dispenser to make the necessary alteration. It occurs to me that the prescription sent to the second chemist may have been corrected by the prescriber after his attention had been directed to it by the first; and if so, this was a most dishonourable proceeding.

There is nothing more annoying to a honest dispenser, or which causes so much embarrassment to the patient, and general distrust in the trader, than to discover that the medicine he supplies differs from that previously supplied by others.

The following is a frequent source of mischief in this respect. Say, for instance, a few pills are prescribed thus:—

℞ Podophyllin, gr. i.
Pip. Cayenne, grs. ii.
Ext. Hyoscyami, q.s., ut fiat.
Pil. viii., 1 omni nocte, h.s.

No stated quantity of the extract being given, pills of various sizes would probably be dispensed at different establishments, some making 5-gr., some 4-gr., and others 3-gr. pills. This produces that want of confidence in the trade above alluded to, although it is the prescriber's error, in giving the vague "q.s.," instead of a fixed quantity, which would thus prevent the possibility of different results.

I am, sir, your obedient servant,
Church Stretton: March 6, 1876. James Phillips.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

Dear Sir,—The prescription in question is a ridiculous one throughout, because both the liq. morph. mur. and the pot. iodid. are incompatible with spt. æth. nit. It showed great caution on the part of the first dispenser in communicating with the medical man, and after the reply he got from him he had no other course open. As to neutralising the free acid in the spt. æth. nit., neither the Pharmacopœia, nor Squire's "Companion" to it, gives us any such information.

I am, yours truly,
Medicus.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

I give a hearty casting vote in favour of the dispenser. Either the prescriber knew that spiritus ætheris nitrosi (B.P.) is incompatible with iodide of potassium, or he did not. In the first case he laid a trap for an unwary dispenser and got caught himself. In the second he was too proud to learn what he ought to have known. In either case his mode of action was not at all commendable, and is happily extremely rare amongst medical men. Umpire.

A GOOD WORD FOR THE PHARMACEUTICAL SOCIETY AND A WHOLESALE CO-OPERATIVE DRUG STORE.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

Sir,—As a chemist of the rising generation, hoping to find in the Pharmaceutical Society, not a curse, but a blessing, perhaps you will publish a few remarks on the general correspondence in your issue of this month.

In the calendar we find the expressed objects of the promoters of the Pharmaceutical Society were laudable, considerate, and comprehensive. The mutual admiration, therefore, which characterised much of their work is merely significant of the heartfelt interest taken therein. After a time, to these promoters followed, as a natural consequence, honourable positions, power, and more substantial benefits; so at the present day the members of the council, although mostly unexamined, are men of the highest talent, experience, and influence, and if their interest is not identical with that of retailers, we are to blame for our selection, as we ought to have taken advantage of the wise regulations affecting the council, whereby opinions arising from trade alterations would have found expression. We cannot expect those who have been intimately associated with the leading members of our trade, both in business and good fellowship, to become late in life agitators for fundamental changes, and this in the midst of the profound apathy exhibited by chemists themselves. Equally would it be illiberal to demand immediate self negation from those who have not yet felt the cruel pressure of a harsh political change. Co-operation, the result of the Malthusian law of life applied to particular classes, is a test of men and methods, and if our purposes and methods in life are good and necessary we have nothing to fear, even if preventive medicine should require us to become a branch of the Civil Service. Trading as at present carried on is *primâ facie* dishonesty: scarcely a household where the wholesale prices of our mixed goods are not known, or a chemistry class where our trade lists are not distributed. The alterations in the examinations force upon us the dishonesty of taking apprentices without the opportunities of fulfilling the requirements. Two methods, then, are left for our consideration. We must either have encouragement to establish home laboratories, or seek to become shareholders in central drug houses and laboratories established on the co-operative plan, where our apprentices may complete their curriculum, and by which we may hope to meet all just requirements of the community; but a legal definition of our functions, and a legalised tariff, with mutual help in supporting the same, must have prompt attention. I beg to say that I am willing to take a ten-pound share in a co-operative concern at its commencement, if begun, as it is of the utmost importance it should be, under the most responsible representation, and feel certain my example would be followed by most retail chemists.

I am, sir, yours faithfully,
John Barker Smith.
Dulwich: Feb. 19, 1876.

THE CHEMIST AND DRUGGIST

☞ *For particulars of Advertisements, Subscriptions, &c., please refer to the first page of Literary matter. An Index to the Advertisements contained in this issue will be found in the front portion of the Journal.*

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J. ALFRED WANKLYN, M.R.C.S., London,
Formerly Professor of Chemistry in the London Institution;
Joint Author of a Book on Water Analysis, and of the Ammonia Process.

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Editorial Notes.

RUMOURS OF WAR.

WE anticipated last month that Baron Bramwell's summing-up in the case of the Apothecaries' Society *v.* Nottingham would be almost certain to suggest further hostilities on the part of the medical profession against counter-prescribing. We take the following from the correspondence columns of the *British Medical Journal* of February 26:—

> SIR,—Will you be good enough to let me know through your query list:
> Can a pharmaceutical chemist prescribe legally?
>
> Can a physician, a surgeon, or a member of the Apothecaries' Hall, prosecute him for doing so? I am, etc., J. M. C.
>
> *** 1. No. 2. He can be prosecuted through the Apothecaries' Society, and is liable to a fine of 20*l.* for every offence. (*Vide* our report in the Journal of February 5, of the case of the Apothecaries' Society *v.* Nottingham.)
>
> SIR,—I noticed in the Journal of February 5 an account of the prosecution of a druggist for illegal practice. In this town there are three druggists, all doing a flourishing business, the Welsh being very gullible in this respect. One of these, who was formerly an unqualified assistant, not only prescribes at the counter, but visits people at their own homes, both in town and country. He carries on the business for a druggist's widow. The others follow his lead, in a minor degree. I believe only one of the three has passed the examination for chemists, yet they both compound and prescribe poisons. It is a great hardship to registered practitioners to see these people climbing over the wall and stealing the best fruit. Theirs is a ready-money business, whilst a general practitioner can with difficulty get his money at the end of six or twelve months, besides losing a large percentage. I think the above would be a proper case for the Defence Association.
>
> I remain your obedient servant,
>
> Castle House, Llanidloes: JOHN MORRIS, M.D.
> February 12, 1876.
>
> *** Prescribing druggists are liable to prosecution and fine under the Apothecaries' Act; and if the local practitioners would combine to furnish the information and funds necessary for prosecution through the Apothecaries' Society they could easily put a stop to this pernicious practice. It is very desirable that such prosecutions should be promptly and vigorously undertaken where the law is infringed, and we should be glad to receive particulars of such prosecutions when undertaken.

The *Lancet* also, replying to "Mr. William Henry Wright," congratulates its readers on the fact that "the Medical Defence Association has shown that it is possible to prosecute successfully such culprits under the Apothecaries' Act."

That matters are not very likely to remain just as they now stand is pretty evident. The Medical Defence Association threaten to follow up their victory by further prosecutions, and medical journalists and practitioners not unnaturally assume that whatever amount of counter prescribing may be left to chemists will be measured entirely by their gracious will and sufferance. It is impossible to deny them this gratification, at least for the present. "The Court awards it, and the law doth give it." But the question is not one which is to be decided simply between the Apothecaries' Society and ourselves. The nation itself is interested in the ultimate solution of it, and the outside public is not so simple as to imagine that self-seeking is an impossible motive in the medical bosom. Any way, it may be taken for certain that the profession will not be permitted to gather fully the fruits of their victory without encountering and conquering the opposing force of the whole pharmaceutical body. The Pharmaceutical Council, even, is getting ready its war paint, though we are sorry to observe that the colour of its resolution is too much sicklied o'er with the pale cast of hesitation. There is, however, a splendid chance for the Defence Association to make a grand *coup* once for all if it should see fit, by marching straight against that councillor who boldly declared that, according to Baron Bramwell's ruling, he infringes the law every day. There is a case ready made; and it is one which we may be certain would be defended with the utmost strength of the Pharmaceutical Society.

Elsewhere we print an account of a very celebrated trial, in which an apothecary was prosecuted by the College of Physicians for illegitimate practice, more than 170 years ago. The case presents in many respects a singular analogy to that recently decided. But in the College of Physicians *v.* Rose the plaintiffs relied on an Act infinitely more stringent than the Apothecaries' Act of 1815, and which contained no saving clause. The defendant was an "apothecary" or a "pharmacopolite," that is he was a trader corresponding to the chemist and druggist of our own day. The pharmacopolites were separated from the grocers by James I. They soon assumed the title of apothecaries, but until 1815 they were never qualified for medical or even pharmaceutical practice by examination. The issue of the case we have referred to, however, being in favour of Rose, gave them at once a legal standing as medical practitioners. They cultivated this section of their business rather than the simple vending of drugs, and hence arose the necessity for the class of chemists and druggists which subsequently appeared. It is not possible to conceive that the latter should have existed for a century side by side with the apothecaries, and sometimes scarcely distinguishable from them, without in some degree imitating their practices in reference to the recommendation of medicines. Of course, if this can be shown to be the case, the assertion of Baron Bramwell would fall to pieces, were he ten times as eminent in law as he actually is, inasmuch as the Apothecaries' Act expressly provides that none of its sections shall interfere with the trade of a chemist and druggist as it was carried on up to the period when that Act was passed. On the face of it we cannot believe that the saving clause in regard to chemists and druggists had reference simply to the buying and selling of drugs, but there are other and stronger reasons, the consideration of which we reserve for another article. Meanwhile we would advise the Defence Association (if it be not illegal for us to advise at all), in their future proceedings, to trust mainly to the Medical Act of 1858, which is still to a great extent unenforced, and in the establishment of which they would have the sympathies and co-operation of all parties except the actual offenders.

PATENT MEDICINES.

The editor of the *Pharmaceutical Journal* seeks for "more light" on the subject of patent medicines, and he evidently needs it, if the following sentence be an indication of how much he knows respecting them. It is, we are assured, erroneous to assume that the patent medicine stamp confers any kind of patronage or recommendation from Government calculated to enhance the popular estimate of any medicine sold in that way. "The real intention of the stamp," we are told, "is to give the purchaser security that he obtains the particular preparation which he desires, and at the same time to protect the man who makes that preparation from fraudulent imitations." The real intention of the stamp, it happens, is nothing of the sort. Its object is simply to provide an easy means for the collection of about 100,000*l.* annually for the revenue. And seeing that any possessor of three half-pence can therewith purchase a patent medicine stamp, which he can proceed to stick on any bottle or box whatever, it is difficult to understand in what way such stamps can be regarded as affording protection either to maker or purchaser.

According to the authority just quoted it is "manifestly out of place to enter upon the discussion of this subject while it is under the consideration of the council." This sentence introduces three columns of—well, it would perhaps be unfair to call it discussion—let us say remarks, a specimen of which we have given, concluding with an appeal to readers to offer views and suggestions, a course which they have been previously informed "would be manifestly out of place." This subject is likely to be a serious one for the trade sooner or later, and it is a matter of some importance that such slip-shod logic and muddled ideas should not go forth as representing the views of the trade generally. The medical journals are eager enough to frighten the public into any theory which will blacken the character and injure the business of chemists and druggists, and their plan of action in the case before us is to improve the patent medicine trade off the face of the earth altogether. It is not advisable to give them the benefit of weak arguments on our own side.

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The council finds itself hopelessly staggered by the difficulties of the question, and no one of its members has been able to suggest a short cut out of the dilemma. According to the Pharmacy Act, patent medicines containing poisons are entirely free from the restrictions affecting the sale of the same poisons in the ordinary course. It would thus appear that the legislature considered it necessary to surround the sale of opium, for example, as such, with every safeguard, and to confine such sale to certain qualified persons, but did not consider the safeguards necessary providing only the opium be sold under a deceptive name, and with the Government stamp affixed. Our medical contemporaries are perfectly justified in pointing out the anomaly of thus permitting, and in a sense even patronising, the free sale of poisons supplied under the patent medicine stamp. They try, however, to gain an unfair advantage for themselves when they urge Government to put its veto on patent medicines altogether. There is a middle course which would meet every reasonable requirement of the public safety, and would in the least possible degree interfere with the trade in patent medicines. It would be to require that every patent medicine containing any poison named in the poison schedule of the Pharmacy Act should have a certain caution label affixed outside each package, indicating that fact, and advising purchasers to be exact in following the directions given for administration. The sale of all such patent medicines should be rigorously confined to registered chemists and druggists, who should in dealing with them follow precisely the same course as is prescribed in respect to the sale of the poisons themselves. The omission to affix such caution label should render the maker of a patent medicine liable to some severe punishment in the event of his delinquency being discovered. The retailer could not be made responsible for the contents of a package which he buys and sells in a sealed condition.

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There would be no difficulty in carrying out such a regulation as this. Mr. Mackay seems under the impression that it would be necessary to name the patent medicines themselves in the poison schedule. Such would by no means be the case. The Pharmaceutical Council, with the consent of the Privy Council, would settle, as now, what are poisons, makers themselves know whether they employ any of these in their compounds, and the most ardent advocate for free trade would hardly maintain that the latter have a right to distribute dangerous or deadly medicines about under names redolent of innocency. Mr. Owen very truly says it is impossible to prevent any one from killing himself if he really wishes to accomplish that end. But the object is rather to save the life of persons who have no suicidal tendencies. Mr. Frazer objects to any attempt to obtain further monopoly for chemists and druggists. In this respect we think the popular Glasgow representative is somewhat out of harmony with the trade. Chemists have little enough monopoly now in return for the restrictions imposed upon them, and to confine to them the sale of patent medicines containing poisons would be only a reasonable concession. Mr. Williams refers to a previous occasion when the council asked the Government to abolish the patent medicine laws altogether, and he says the outcry in the trade was so considerable that the council had to drop the subject altogether. He thinks they could not make a similar proposition to Government again. We should hope they will not think of doing so. Their duty is simply to be ready with a logical proposal if their opinion is called for, and they have to remember in forming such an opinion that they represent the trade on the one hand, while on the other they are to a certain extent entrusted with the guardianship of public safety.

AIX-LES-BAINS.—ESTIMATION OF MERCURY IN URINE.

Aix-les-Bains, it need be hardly stated, is one of the favourite resorts of the tourist during the summer season. People of various nations—Italians, French, and Russians—crowd there in search of pleasure, or for the recovery of their health. Thither repair also in large numbers our own countrymen, tempted both by the charms of scenery and the Sulphur Springs. The temperature of these mineral waters ranges between 100° and 117° Fahr., and there are two sources—one the alum spring, so called, to which Daguin gave the name of *la plus gracieuse*, and which is chiefly used for drinking purposes, and the other, the sulphur spring, which is employed on an extensive scale as a remedial agent. A fine Établissement d'Eaux Thermales has been erected, which in 1874, according to the official statement, received 94,927 patients, and relieved 19,820 gratuitous applicants, to which numbers must be added, 12,852 bathers. Three hundred attendants are engaged in carrying out the details of hydropathic treatment: several of these have gained a deserved reputation for their skill in administering the douche.

Let it be allowed at once that Aix-les-Bains, lying as it does on the Italian route, and but six hours distant from Turin, and being the centre of the attractions of Savoy, offers strong inducements of its own to its visitors. Still, these hot sulphur springs must be credited with no small a degree of efficacy when so many thousand patients, real or imaginary, make an annual pilgrimage thither.

We may believe the statement that cutaneous diseases, rheumatism and affections of the joints are benefited; it is asserted also upon medical authority that sufferers from mercurialism are set free from the last trace of mercury that may be lurking in the system. The estimation of this metal in the urine is of pharmaceutical importance, and therefore a matter likely to interest those engaged in medical analysis.

The method used is that of electrolysis according to Schneider's process: five grammes of potassium chlorate are dissolved in a litre of urine, with the addition of hydrochloric acid until a strong acid reaction has been obtained, and the solution is then heated in a water-bath. The remaining particulars will be best given by quoting an actual operation made by J. A. Davernay, who is a pharmacien 1^{re} classe.

"I experimented," writes the analyst, "on about 800 grammes of urine; after having reduced it to three-quarters of its bulk, I submitted it to electrolysis, using an eight-celled battery of Leclauchay. The positive pole of this battery consisted of a thick platinum wire, and the negative pole of a gold wire about 0·001^{m} in diameter, the broad extremity of which was 0·002^{m}.

"In order to restrict the separation of the mercury on the smallest possible surface, electrolysis was effected in a vessel which was wider than it was high.

"At the end of twenty-four hours the gold wire appeared amalgamated. I proceeded to recognise the mercury in the following manner:—

"I introduced the gold wire into a carefully cleaned glass tube, drawn out at one extremity into a capillary point, and closed at the other by a spirit lamp. Then the whole length of the widest part of the tube containing the metal was heated to redness, and I expelled the mercury which was condensed in the capillary extremity. To recognise it, the part of the tube containing the metal was separated by fusion from the capillary portion, so that there only remained of the former a short piece of wide tube in the shape of a bulb.

"On cooling, I opened the bulb by piercing the extremity drawn out to a point; then, with a glass thread, a little iodine was introduced, and the bulb was again closed. The iodine vapour mounted in the capillary part of the tube, and brown, red, and yellow rings made their appearance in the parts where there had been mercury. These rings were carefully heated, when they condensed in the highest portion of the capillary tube under the form of two rings, the one red and the other yellow, characteristic of biniodide of mercury.

"Another specimen of urine (about six weeks after) was analysed in the same way as the former sample, only this time the traces of amalgam presented by the gold wire were so inconsiderable that it was impossible to separate any mercury." The first experiment was made on August 2, 1875, and the second on September 24; consequently the sulphur treatment had eliminated the whole of the mercury.

The two sulphur springs at Aix-les-Bains yield a daily supply of 6,362,480 litres for the service of the Établissement Thermal. The sulphur spring at Marlioz (a pretty suburb within a ten-minutes' drive from Aix) exhibits the remarkable contrast of having a temperature as low as 14° C.

It is much to be regretted that the last published analysis by Dr. Bonjean of the two important springs of Aix should not bear a later date than that of 1838, while the alkaline sulphur spring of Marlioz has not been more recently examined than in 1857.

DISPENSING AT SHEFFIELD.—MR. A. H. ALLEN EXPLAINS.

At a recent meeting of the Health Committee of the Sheffield Town Council two letters were read from Mr. A. H. Allen, the borough analyst, concerning the late investigations into the dispensing accuracy of the chemists and druggists of that locality. Both letters were placed on the official minutes. The first letter is dated January 18, 1876, and runs thus:—

"Public attention having been called to my recent report as borough analyst to an extent quite unexpected, and erroneous inferences having been drawn from it in several instances, I think it desirable to give some further information on the points in question. Exception has been taken that my statement was not sufficiently explicit respecting the class of druggists chiefly visited by the inspectors. It seems not to be generally known that samples submitted to me are distinguished merely by special marks or numbers, and that I was, and still am, ignorant of the names of the dealers from whom the various articles were obtained, except in a few instances in which the dispenser stamped the prescription. An erroneous impression seems to exist as to the number of mixtures submitted to me for analysis. The total number was 20. Of these 14 were found to have been correctly made up; on three (containing spirit of nitrous ether), I was unable to express a positive opinion; and three contained quantities of the active ingredients which varied considerably from the prescribed amounts. In one case I reported that 122 grains of iodide of potassium were present, against 120 grains prescribed. I consider in this case that the dispensing was performed with every desirable accuracy, a difference of a grain or two in a hundred being a perfectly insignificant variation, and I had no idea it would be otherwise regarded. Of the three instances in which considerable departure from the prescribed amount was observed, I have good reason to believe that neither the iodide of potassium nor quinine was adulterated; nor is either substance liable to any sensible decomposition when kept, as is usual, in the solid state. It is possible that the variations observed may have been due to the quantities having been guessed at instead of being weighed; but in that case it is curious that all three errors should have been on the side of deficiency. An attempt has been made to show that the expense of iodide of potassium and sulphate of quinine is so insignificant as not to justify my description of them as 'rather expensive remedies.' The retail price of iodide of potassium is about 1*s.* 8*d.* or 2*s.* per ounce, so that the value of the amount in each prescription would be about 5*d.* or 6*d.*, apart from the other ingredients of the mixture. The retail price of sulphate of quinine is ½*d.* a grain, so that 40 grains introduced would be worth about 1*s.* 8*d.* retail. It is evident that the omission of one-third or one-fourth of the prescribed quantity of quinine would enable the vendor to undersell considerably another dispenser who introduced the full amount. The results of my examination of the twelve samples of glycerine were on the whole by no means unsatisfactory. No gross adulteration was detected, though I think the 'best glycerine' should be equal to the standard prescribed in the 'British Pharmacopœia.' Although I distinctly stated in my report that the eleven samples of pepper were a remanet from last quarter, it appears to have been supposed that they also were purchased from druggists instead of grocers, as was actually the case. It has been contended that prosecutions ought to have preceded the issue of my report. As the last batch of samples, including twelve prescriptions and twelve glycerines, was only received from the inspectors on December 11, it is evident it was not possible to lay my results before you and for you to take proceedings between the reception of the samples and the beginning of the year, when the quarterly report (which the Act requires me to make) was due."

In the other letter, which is dated March 2, 1876, Mr. Allen satisfactorily replies to the insinuation which has been thrown out to the effect that he had himself instigated the extended publication of the report. He writes:—

"Since the date of my letter of January 18, I have for the first time learnt the names of the twenty druggists at whose shops the prescriptions mentioned in my last quarterly report were made up. On examination of the list it appears that ten of the shops visited by the inspectors were situated on omnibus or coach routes, and that the inaccurately dispensed prescriptions were made up at three of these ten shops. I regret the decision of the committee not to prosecute any of the inaccurate dispensers, as the innocent druggists now lie under a certain suspicion, from which due legal action would have cleared them. With reference to the question asked me at the last meeting of the council which I attended, I desire once more to deny absolutely that there is any foundation for the suggestion that I was either directly or indirectly responsible for the wide and unexpected publicity attained by my last report, and I am in a position to inform the committee that many of the London and provincial papers which noticed the report received their intelligence from Mr. Dunbar, of the *Sheffield Daily Telegraph*, who forwarded the news in his capacity of Sheffield correspondent of the Press Association. I shall esteem it a favour if you will place this letter, and that of January 18, on your official minutes."

THE ELECTRIC LIGHT.

For several weeks past the Paris station of the Chemin de Fer du Nord has been the scene of experiments of lighting the waiting-rooms and platforms by means of electricity. Electric lamps of unpolished glass have been employed, and the fact has been ascertained that the electric generator, giving the value of 1,850 jets of Carcel's lamp, burns and consumes just half the quantity, in proportion, of a generator of 300 jets only. Thus we have it decided that lighting by electricity is only truly economical when used to illuminate large areas. The object of using electric lamps of unpolished glass is to annul that brilliancy which, in ordinary electric illumination, because of its little fixity, is so fatiguing to the eye. The light loses, it is true something of its intensity, but, as emitted in these experiments, is much softer. It is easy to understand that, with the free electric light, dockyards, timber-yards, and like places, covering a large area, can receive all the light required, but it must be made a great deal more perfect before it can be employed, say, in a locksmith's shop. Certain irregularities or intermittences in the light have been remarked in these experiments, due, it appears, to the imperfection of the charcoal, picked up by hazard amongst the coke of the gas-works, employed in the lamps; but it is believed that, with a little more experience, this difficulty will be surmounted.

PHARMACY IN GERMANY.

A committee appointed by the Department of Industry and Commerce of Germany has just concluded its report on the question of regulations for pharmacies. It proposes to invite the Chancellor to elaborate special legislation for pharmacies, based on a series of suggestions which the Commission makes as the result of its own investigations, and in accordance with the many petitions which have been presented. This project of law will be shortly submitted to the German Parliament.

The suggestions are mainly these:—That the establishment of new pharmacies shall only be permitted in virtue of concessions, purely personal, from the State. The concession not to be ceded nor transmitted by heritage, but to become void when the grantee ceases to exercise his calling, either by a voluntary act or in consequence of death. The grant to be accorded without condition, and the new grantee not to be obliged to take to his own charge the stock and fixtures of his predecessor. On the other hand, the widow and children, if minors, of a dead grantee will have the right to carry on the pharmacy for their own benefit, with the help of a duly qualified chemist, for a period, the maximum duration of which will be fixed by the proposed law. When a concession is given the interests of the public only are to be taken into consideration, but there is to be an investigation to discover if the new pharmacy, by its situation, will prejudice any of the pharmacies already in existence. From the year 1900 these principles will be applied, without distinction, to all pharmacies, whether the concessions up to that date were personal or not. All rights to exercise exclusively the occupation of a pharmacien, the rights of according concessions now belonging to the treasury, to corporations, or to institutions, will be abolished from that date. The legislature is to decide if any indemnification should be given to the assigns as compensation for the suppression of the rights formerly belonging to them. Finally, the laws of the several confederate States are to remain in force until the promulgation of the law of the Empire in the year 1900.

THE PHARMACEUTICAL CONVERSAZIONE.

We hope it is not too late to suggest a word of wisdom to the Pharmaceutical Council in regard to their conversazione. At the time when that is held there will be open in London a perfectly novel and unique exhibition of scientific apparatus, which promises to be of the greatest interest. The promoters of that undertaking are anxious that scientific societies should hold their annual assemblies in the corridors of the exhibition building where this collection will be displayed. The Pharmaceutical Society would, no doubt, be heartily welcome, and it would be quite superfluous for us to dwell on the appropriateness of the surroundings. The change would be appreciated, we are certain, by many of the society's guests, to whom the everlasting repetition of that stereotyped programme of Coldstream Guards, glee singing, and moderately warm coffee, is becoming monotonous and wearisome.

REVIEWS

AND

Literary Notes.

Royle's Manual of Materia Medica. Sixth edition. By John Harley, M.D. London: Churchill.

THE new edition of this famous standard work calls for something beyond a mere passing notice, as it presents several features of marked interest. In the first place, a period of eight years has elapsed since the publication of the last edition, and in the interval much has been done to extend our acquaintance with the subject treated in this manual. Meanwhile the editor of the last three issues, Dr. Headland, has died, and his place has been filled by Dr. John Harley. A better choice could not have been made, and Dr. Harley has evidently fulfilled his task *con amore.* Evidence of his supervision is to be found in almost every second sentence, and the improvement he has effected in the literary style of the book is very considerable. Long sentences are made brief and pointed, redundancy and repetition are checked wherever they occur, and new information is always worked in at the right spot. Besides gaining space by these means, much has also been saved by the excision of the botanic chapters, the details of which, the editor remarks, "are to be found in elementary works on botany." The room thus gained is filled with fuller references to the action of medicines, while at the same time a somewhat larger type has been used, and a good many new drawings have been introduced. We read in the preface: "Those who look for the results of experiments on mutilated animals in the following pages will not find them, for the editor is satisfied that this is not legitimate therapeutical inquiry, and that nothing short of a patient survey of the operation of a drug in the entire body in health, and under the variable influence of disease, can furnish the data upon which we may build a proper theory of its action." This sentence should be a sweet morsel for the anti-vivisectionists.

Dr. Harley has taken advantage of his opportunity to introduce some general remarks on prescribing and dispensing, and also on the mutual relations of the prescriber and dispenser. In the former section his remarks are practical, but not particularly novel, though we should mention that he strongly urges the introduction of some indicative sign when an excessive dose of a powerful medicine is prescribed. But the chapter under the latter heading is worth quotation in full, and is so weak in its reasoning that we hope it will be modified or expunged altogether if Dr. Harley edits another edition of the manual. We subjoin the passage:—

MUTUAL RELATIONS OF THE PRESCRIBER AND DISPENSER.

Whenever it is practicable, the prescriber should be his own dispenser. The relation between a medical man and his patient is naturally of the most confidential kind, and it is sometimes with reluctance that the former directs and the latter accepts the intervention of a third person in the capacity of a dispenser, for both are aware that inferences as to the nature of the complaint may be formed from the prescription; nor is the matter mended by a knowledge that the inference may be incorrect.

But the medical man has other inducements to dispense his own prescriptions,—he has a personal interest in them, and that sense of security which a man of sound sense has in his own work: and in sending his prescriptions to another he feels the force of the old aphorism, "There's many a slip between the cup and the lip," and believes that the chances of a slip are diminished when the medicine is sent out under his own supervision. If the medicine be obtained from an unknown source, and the action repeatedly fails, he must infer either that the condition of the patient obstructs the action of the drug, or that the drug is inefficient. Some experience of this latter contingency will rarely be wanting to give strong bias to his conclusion. This may nevertheless be unjust; but anyhow an element of confusion is imported into the case, alike unsatisfactory to each of the three parties concerned. Had the medical man sent his patient a preparation with the individual action of which he was familiar, doubts would never have arisen, but, on the contrary, he may have added a useful fact to medical science. But further, when a medical man entrusts the prescription to his patient, a very long interval may elapse before he returns, and then he may be found suffering not so much from the disease as from the abuse of his medicine; or he may never return, choosing to be guided by his own discretion, or by the advice of the dispenser as to the need of continuing or omitting the use of the medicine. By such a course as this the influence of the prescriber is weakened, and it may be that his usefulness is prevented by the patient, who is not unseldom ready to recommend the use of his prescription for the relief of every ailment that he fancies has any similarity to his own.

The foregoing considerations suggest the relations which should subsist between the prescriber and dispenser. Patients constantly place the druggist in a very unpleasant position: they catechise him on the composition and action of the medicine prescribed. "Is it poisonous?" "It does not contain opium, I hope?" "May I give a dose to my child?" &c. Now it is easy to answer these questions, indeed, the difficulty is to avoid an answer; but it is plain that no other answer should be given in any case but this "Pardon me that I cannot answer a single question you put to me respecting this medicine. I am in honour bound to refer you to the person who prescribed it, and he, I am sure, will give you the information you seek if he thinks it is to your advantage to possess it."

As often as confidence is thus established between the prescriber and dispenser, the former will do well to intrust the greater portion of his prescriptions to the latter; but it is undoubtedly desirable that the general practitioner should be able to dispense conveniently and expeditiously certain of his own prescriptions, for it will often be an advantage to his patient and himself that he should do so.

The argument here given for medical dispensing is worth nothing, except in cases where the prescriber dispenses with his own hand. How fit he is to do this properly after his daily rounds let the hard-working general practitioner say. Whether such an one might reasonably have most confidence in a trained pharmaceutist with his well appointed dispensary around him, or in such a dispenser as it generally falls to his lot to employ, is hardly worth discussing, and the last part of Dr. Harley's argument brings us in face of the claim which physicians would fain establish, but which they would be wise not to insist upon, to the possession of a vested interest in the complaints of the public. We have not space to discuss the points suggested here, but leave the consideration of them to our readers.

Artificial Aërated Waters. By Joseph Goold. London: Barrett, 21 Seething Lane.

THERE is a serious want of a good independent treatise on the manufacture of aërated waters, and Mr. Goold's little book, to a limited extent, fills the vacuum. The author is evidently a practical man, and his hints are well worth reading by those engaged in the trade. But his book is by no means complete enough to command the success which we believe would attend a thorough manual of which the material before us might well serve as specimen pages. He writes, he says, "for those who have at least some knowledge of the subject to begin with." These are the people who least require his assistance, though, as we have already said, even such would probably find matter of value in these pages. What is wanted is a treatise on the subject *ab initio.* . Mr. Goold hints that he may go into the subject more fully "if a new edition is called for." That is to say, first purchasers are to pay expenses for the benefit of later readers. Nevertheless, we hope this author will seriously take the work in hand. Evidently he is fitted for it, and if he will give his own knowledge and opinions, and industriously investigate all accessible sources of information, adding drawings and formulæ freely, his labour and expense will not, we think, be thrown away. Hundreds commence the trade yearly, and it is these who seek, at present vainly, for some guide beyond the pamphlets issued by the various machine makers. One fault in the book is the frequent reference to a certain publication with which the author seems to be connected; and there is also evidence of some hurry in the composition. For example, the words "receipt" and "recipe" are used promiscuously, and we are also informed that nitrous oxide gas, "like carbonic acid, can be obtained in the liquid and solid forms!"

We will wind up our comments by quoting a very sensible paragraph on the use of acetic acid in the manufacture of aërated waters. The author says:—

Many people imagine that they prefer the taste of citric or tartaric acid, as the case may be, especially if they know that it is more expensive than other kinds; but, generally speaking, no acid is so suitable for aërated waters as the acetic.... The prejudice against acetic acid as an alimentary substance is not confined to makers and consumers of aërated waters: physicians and œnologists are apt to entertain similar mistaken notions. Dyspeptics are repeatedly cautioned not to partake of this or that aliment, either because it is acid, or will "turn acid on the stomach;" and a single drop of acetic acid in a glass of sherry is unsparingly declaimed against and charged with creating endless disorders; whereas, at the same meal, ten times as much may be taken in the form of "Oriental Chutney" or Somebody's "Relish," and in this instance it is extolled as a "grateful stomachic" or a "powerful assistant to digestion." Acetified or "pricked" sherry, as it is technically called, is, without doubt, an unwholesome beverage, but its unwholesomeness is not due to its acetic acid. The truth is, this semi-scientific prejudice against the use of acetic acid as an ingredient in common beverages arises from the fact that, in most instances where this acid is the product of a natural process, it is associated with other bodies of a more or less deleterious character.

THE SERIES OF Science Primers published by Macmillan & Co. within the past few years is now to be supplemented by Primers of History and Literature, all by authors of very high reputation, and all uniform in price and style. One of the new series is now before us. It is a Primer of English Literature, by the Rev. Stopford A. Brooke, M.A. To compress a sketch of such a mighty subject as English literature into a little book of 160 pages is a bold attempt truly, and threatens either a catalogue style or an incompleteness sufficient to mar the design. It is but simple justice to the author to say that he has skilfully avoided both of these risks. He has made his book something more than a bare recital of facts and dates, and his criticisms are invariably able, if not always just. Notwithstanding Mr. Brooke's evident talent, however, we are inclined to a feeling of disappointment at the result of his work. The limits within which he had to condense his history forbad the introduction of illustrative extracts; but the almost entire absence of these seems to us a fatal objection to the value of the primer. In addition to this, Mr. Brooke fails to show with sufficient clearness how English literature was and is the voice of the English nation. He omits to bring into prominence the great effect of the Reformation on our literature, acting through the minds of our people, and he passes over far too lightly the English Bible as the fountain and standard of our language for 300 years. Amid a mass of criticisms, necessarily written in dogmatic form, one might pick out many to combat, but this would be unreasonable. Certain it is that the history of English literature has never been sketched with so much force in such a compass before.

"Botany,"[*] by J. D. Hooker, C.B., F.R.S.—This Science Primer, so long expected, has at last made its appearance, to the delight of many teachers and private families. Its object "is to supply an elementary knowledge of the principal facts of plant-life, together with the means of training beginners in the way to observe plants methodically and accurately, and in the way to apply the knowledge thus obtained to the methodical study of botany." It would be idle to attempt any criticism of the work of an author universally allowed to be the master of his subject. Great pains have been taken to enable instructors of young pupils to set the leading principles of the science of botany clearly before the learners, and to promote this end the descriptive sentences have been most carefully arranged, and excellent illustrations have been added. The two points of novelty are, first, the schedules for exercises on leaves as well as the well-known flower schedules as proposed by the late Prof. Henslow, of Cambridge; and secondly, the suggestion for a school garden of flowering plants to be provided by our educational establishments. The plants indicated in the Primer should, whenever possible, be put into each pupil's hand. "Many of them," says Dr. Hooker, "should be grown in every school garden, and arranged in it systematically, so that the teacher may have the same means of displaying to his pupils the principles of classification that the great founder of the natural classification of plants, Bernard de Jussieu, had after he had thus arranged the garden of the palace of Trianon after its establishment by Louis XV." This is a bold step in the direction of "original research," and devoutly is it to be hoped that the plan may be carried out in an effectual manner. We would express our warmest commendation of this brief exposition by Dr. Hooker of that department of knowledge to which he has so long devoted his attention.

"Debrett's Peerage" and "Debrett's Baronetage and Knightage (London: Dean & Son) are perhaps the oldest of our annuals. They have been published for the past 170 years, and if the somewhat silly custom of dubbing certain persons with an extra designation survives so long, "Debrett" will doubtless continue for another like period. It is not necessary for us to criticise these works; but we may remind a section of our readers of their especial value in respect of their accuracy in giving the addresses of the *crême de la crême* of the upper classes of Great Britain. To certain of the advertising fraternity they must be particularly useful on this account.

We also have to acknowledge the receipt of Messrs. Dean & Sons' valuable "Directory of the Export Merchant Shippers of London, Liverpool, Birmingham, Wolverhampton, and Walsall." The essential feature of this work is that it undertakes to classify all these merchant shippers under the headings both of the countries to which they consign and the class of goods in which they chiefly trade. This information is extremely useful to manufacturers who wish to get at just those exporters who deal in their particular goods. Messrs. Dean take a great deal of trouble to obtain these facts, and the only fault we have to find is that they have somewhat overdone their system of classification. We find several instances of firms who are stated to deal in "hardware, &c.," and who we know have also lately exported drugs as well. It would be better to put all such under "General." Liverpool is an important addition of this year, and it is intimated that Manchester may perhaps come in in 1877.

The Society of Public Analysts has issued in volume form a reprint of its proceedings as reported from time to time in the *Chemical News*. The reproduction has been performed so faithfully as to present a result not particularly creditable to the literary efficiency of the society. Each week's material has been packed on the top of its predecessors without the smallest attempt at pruning, sorting, or editing in any form whatever. The Sale of Food and Drugs Act, for example, is given in its imperfect form as a bill three or four times over. A few little fragments of the discussions in Parliament are also inserted; but the volume by no means contains a full or even concise history of the progress of the bill through all its stages. Then, interspersed with these reports and with isolated reports of adulteration cases, come some dozen or so of papers on analytical subjects of unequal value. The book should certainly be possessed by public analysts, but the bestowal of a little labour and a good deal of knife on it would have rendered it much more valuable to chemists generally.

PHARMACY IN IRELAND.

Pharmaceutical Society of Ireland.

The monthly meeting of the council of the above society was held at the College of Physicians, Kildare Street, on Wednesday, March 1, Sir D. J. Corrigan, M.D., Bart., President, in the chair. The following members were present:—Dr. Aquilla Smith, V.-P., the Right Hon. the Lord Mayor, Mr. Collins, Dr. Frazer, Mr. Goodwin, Mr. Hayes, Mr. E. M. Hodgson, Mr. J. T. Holmes, Dr. Leet, Dr. Macnamara, Mr. Pring (Belfast), Dr. Emerson Reynolds, Dr. Ryan, Professor Tichborne, Dr. Whittaker (Belfast).

The following business appeared on the summons:—

I.—To consider letters from several correspondents.

II.—Notices of motion (Dr. A. Smith).

A candidate for membership shall, at a meeting of the council, be proposed and seconded by members of the society, and the name and address of every candidate shall be inserted in the summons for the next meeting of the council, when the candidate may be admitted by a majority of votes.

Every person elected as member shall sign his name and address to a written declaration that he will comply with the regulations of the society.

Fees.—The fee for a Licentiate of the Apothecaries' Hall of Ireland to be registered as a pharmaceutical chemist shall be three guineas (3*l.* 3*s.*).

The fee for a registered pharmaceutical chemist to become a member of the society shall be three guineas (3*l.* 3*s.*).

All donations of money to the society shall be kept as a reserve fund, to be applied as a general meeting of the society may direct.

III.—Notice of motion (Mr. E. M. Hodgson)—

"That the persons who may be rejected prior to October, 1876, shall be entitled to present themselves for re-examination under the same conditions."

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The letters received from the several correspondents were read, and the registrar instructed to send replies. The letters were principally asking questions relative to the Act, in which case the correspondents were referred to the Act.

It was proposed by Dr. A. Smith, seconded by Mr. Pring, that "A candidate for membership shall, at a meeting of the council, be proposed and seconded by members of the society, and the name and address of every candidate shall be inserted in the summons for the next meeting of the council, when the candidate may be admitted by a majority of votes." Carried unanimously.

Dr. Smith proposed that "Every person elected as member shall sign his name and address to a written declaration that he will comply with the regulations of the society."

The Lord Mayor remarked that such a course would be illegal, and the motion was withdrawn.

It was proposed by Dr. A. Smith, seconded by Dr. Whittaker, and carried unanimously, that "The fee for a Licentiate of the Apothecaries' Hall of Ireland to be registered as a pharmaceutical chemist shall be three guineas (3*l.* 3*s.*)."

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[*] Science Primers. *Botany.* By J. D. Hooker, C.B., F.R.S., with illustrations. London: Macmillan & Co. 1876.

The annual subscription for membership of the society was fixed at one guinea; for life membership, ten guineas.

Mr. E. M. Hodgson was allowed to alter his notice of motion, and proposed instead that "Persons who may be rejected prior to October, 1876, shall be entitled to present themselves for re-examination on the same conditions for twelve months after that date." The motion was seconded by Mr. J. T. Holmes, and carried by a large majority.

Professor Tichborne introduced the subject of holding evening meetings in connection with the society. After some conversation, the matter was held over until the next meeting.

The first Preliminary Examination was fixed for the first week in April. It is understood several ladies are preparing for this examination at the Queen's Institute, Molesworth Street.

THE IRISH PHARMACEUTICAL EXAMINATIONS.

The first examination in connection with the Pharmaceutical Society of Ireland was held in the College of Physicians, Kildare Street, on Wednesday, March 1.

The following were the examiners:—Latin, English, and Arithmetic, Dr. Collins; Pharmaceutical and General Chemistry, Mr. H. N. Draper; Practical Pharmacy, Dr. Montgomery; Materia Medica and Botany, Dr. W. G. Smith.

The following members of the council were present at the examination:—Dr. A. Smith (vice-president), Dr. Collins, Mr. J. T. Holmes, Dr. Leet, Mr. Pring (Belfast), Dr. Ryan, Mr. Tichborne, and Dr. Whittaker (Belfast).

Ten candidates were examined: nine passed, viz.:—William Nassau Allen, Harry Napier Draper, Francis Freedman, James John Goskar, Philip Hoffe, James Leslie, Andrew McNaught, Stanley Oldham, George A. Webb.

The examiners reported that the successful candidates had passed a very creditable examination.

CHEMICAL SOCIETY.

Thursday, February 17, 1876.

PROFESSOR ABEL, F.R.S., President, in the chair.

After the usual nomination and election of Fellows, the President announced that Mr. James Duncan had presented the society with a most life-like and spirited marble bust of Dr. Hofmann. He then called upon Professor Frankland to deliver his lecture "On Some Points in the Analysis of Potable Waters." After alluding to the incalculable importance of water analysis in a sanitary point of view, not only in showing the present organic impurity, but also as giving evidence of past pollution, he proceeded to describe the most recent improvements in the combustion method of determining the amount of carbon and nitrogen in water residues. A full discussion of the variation in purity of the water supplied during the past eight years by the various London companies then followed, illustrated by most excellent diagrams, and the lecturer concluded by pointing out some of the objections to the other well-known processes employed for water analysis. Owing to the lateness of the hour, the discussion was adjourned until the ensuing meeting.

Thursday, March 2, 1876.

PROFESSOR ABEL, F.R.S., President, in the chair.

This meeting was entirely occupied with the discussion of the various points in connection with water analysis raised by Dr. Frankland's lecture delivered at the previous meeting. The debate, which lasted until a late hour, turned chiefly on the respective merits of Messrs. Frankland and Armstrong's "combustion method" and of the "albumenoid ammonia process" of Messrs. Wanklyn, Chapman, and Smith, for determining the amount of impurity in potable waters. The meeting was finally adjourned until Thursday, March 16, for which the following papers are announced:—1. "Experiments with Crystallised Glycerine," by Dr. van Roos. 2. "Notes on the Fatty Acids and on a Suggested Application of Photography," by Mr. W. H. Hatcher. 3. "On Stibine," by Mr. F. Jones. 4. "On the Use of Platinum in the Ultimate Analysis of Carbon Compounds," by Mr. F. Kopfer. 5. "Preliminary Notice on the Action of Sulphuric Acid on Naphthalene," by Dr. J. Stenhouse and Mr. C. E. Groves. 6. "On the Action of Organic Acids and their Anhydrides on the Natural Alkaloids, Part V.," by Mr. G. H. Beckett and Dr. C. R. A. Wright.

LEGAL & MAGISTERIAL.

ALLEGED MANSLAUGHTER BY A CHEMIST.

A CHEMIST, named James Harrison, at Birmingham, has been committed for trial for the manslaughter of a woman named Rhoda Done, who died on the 9th inst. It appeared from the evidence given at the inquest that the deceased was confined on January 9, and was attended by the prisoner. He continued to visit her for nearly a fortnight, when he suddenly ceased his attendance, and the woman rapidly grew worse. Dr. Jackson was called in, and he invoked the assistance of Mr. Lawson Tait, who found that the woman had been improperly treated. In spite of their efforts she ultimately died, the immediate cause of death being puerperal fever, arising from blood poisoning. Harrison's treatment was condemned by three medical men who gave evidence, and he was accordingly committed for manslaughter.

THE ADULTERATION ACT—TWO CHARGES AGAINST A CHEMIST.

AT the Coleshill Police Court, on Feb. 23, before Messrs. R. F. Croxall, E. A. Everitt, G. Skey, and Captain Digby, John Sumner, grocer and druggist, of Coleshill, was summoned by Samuel Bretherton, the inspector of the rural sanitary district of Meriden, for having sold, on January 12, a certain drug—to wit, milk of sulphur—as unadulterated, it being adulterated with sulphate of lime, to the prejudice of the purchaser; and also that, on January 12, the said John Sumner sold to the said plaintiff a certain article of food—to wit, cocoa—as unadulterated, which was adulterated with starch and sugar, to the prejudice of the purchaser. Mr. Seymour, clerk to the sanitary authority, prosecuted; and Mr. Young, barrister (instructed by Messrs. Rowlands and Bagnall, solicitors, of Birmingham), appeared for Mr. Sumner in the milk of sulphur case; and Mr. Wontner, solicitor, of London, in the cocoa case. Mr. Jones and Mr. H. Hadley attended to watch the cases on behalf of the Birmingham Chemists' and Grocers' Associations. The cases excited a great deal of interest, and the court was crowded throughout the hearing.

Mr. Seymour, in opening the first case against the defendant, said the information was laid under the 6th section of the Sale of Food and Drugs Act, 1875, which provided that any person who sold, to the prejudice of the purchaser, any article of food or drug which was not of the nature demanded by the purchaser should be liable to a penalty of 20*l.* On January 12 last the inspector of the local sanitary authority purchased at the defendant's shop a quantity of milk of sulphur, which he subsequently sent to Dr. Alfred Hill to be analysed. Dr. Hill had given a certificate, which showed that, according to the result of his analysis, the milk of sulphur contained 59¾ per cent. of sulphate of lime, which was an adulteration and a fraud, and probably injurious to health. Upon that information the summons had been brought, and an adjournment from last week had taken place in order that Dr. Hill might be present for examination. He called

Samuel Bretherton, who stated that on January 12 he went to the shop of the defendant and purchased two ounces of milk of sulphur, for which he paid 2½*d.* He told the defendant that he purchased the sample for analysis, and offered to divide it. The next day he took the sample to Dr. Hill, who divided it into two parts. He produced one half, with Dr. Hill's certificate of adulteration.

Mr. Young admitted the sale, and did not object to the putting in of Dr. Hill's certificate.

Dr. Alfred Hill, analyst to the borough of Birmingham and county of Warwick, was the next witness. He deposed to receiving a sample of milk of sulphur numbered 219, but did not know the name of the person from whom it was obtained.

He divided it into two parts, one of which he submitted to analysis — microscopical and chemical. On a microscopical examination he found large crystals which ought not to be there, and from which he inferred that sulphate of lime was present. He then treated a portion chemically, and having volatilised all the sulphur, he obtained a residuum of sulphate of lime, amounting to 59¾ per cent. of the bulk. Milk of sulphur was used in skin diseases and as a laxative, but sulphate of lime would counteract the laxative effect. Sulphate of lime was insoluble, and if a rat had suffered from taking it, it would die from concretion of the bowels. In some constitutions sulphate of lime would be very injurious, and would create stone. Lime and sulphur were boiled together, and acidified by hydrochloric acid, and the precipitate thrown down was chloride of calcium. Dr. Hill read from a work by Dr. Attfield the opinion of that gentleman that the quantity of insoluble matter introduced in the manufacture of "milk of sulphur" would be to the prejudice of the purchaser.

Mr. Young, in cross-examination, read from the "London Pharmacopœia," published in 1724, in which was stated the difference between lac sulphuris (milk of sulphur) and sulphur precipitatum. Dr. Hill, however, stated that lac sulphuris and sulphur precipitatum were one and the same thing. There might be a difference according to the Pharmacopœia of 1724, but everyone ought to be bound by the Pharmacopœia of the present day. Mr. Young also read the proportionate constituents of the two articles in question, as given by Gray's supplement to the Pharmacopœia of 1828; but Dr. Hill said he considered that an obsolete book. Gray distinguished between the two drugs very improperly. Witness knew Dr. Redwood by name. Dr. Redwood also distinguished between the two drugs—the one being prepared by hydrochloric acid, and the other by sulphuric acid. That was under the old system. He did not agree with Dr. Redwood that milk of sulphur was better when it had a foreign admixture. There was no such drug as milk of sulphur mentioned in the newer Pharmacopœias. It was called sulphur precipitatum. It was defined inferentially as being a body having the quality of being "volatilised by heat." This would not be the case with adulterated milk of sulphur. It was a fact that they could not mix sulphur precipitatum in water, but it could be "rubbed down." It could be mixed with treacle or jam. The adulterated milk of sulphur would mix with water.

Mr. Young: Was it milk of sulphur or sulphur precipitatum that they used to use at Dotheboys Hall?

Dr. Hill said he should think it was flowers of sulphur. It might have been milk of sulphur, but he had had no experience in prescribing such things. The crystals he had mentioned in his evidence in chief were formed by the introduction of sulphuric acid, and being insoluble, they produced constipation. He was aware that doctors differed. He had never tried an experiment with the crystals on rat, cat, or dog, nor did he make a post-mortem examination of the rat he had mentioned. Dealers in chemicals might make distinctions between sulphur precipitatum and commercial milk of sulphur, and there might be a difference in price.

Mr. Young produced the price lists of several leading wholesale chemists, showing under the heading of "sulphur" eight different preparations, among which were sulphur precipitatum and milk of sulphur, the former being more than double the price of the latter.—Re-examined: Dr. Muspratt, in his recent work on chemistry, stated that the presence of sulphate of lime in milk of sulphur was unnecessary, and was injurious to health.

This was the case for the prosecution.

Mr. Young, in defence, said the case turned upon the question of whether milk of sulphur and sulphur precipitatum were one and the same thing, the affirmative of which he contended the prosecution had failed to prove. There was no more pretence for charging his client with selling an adulterated article than there was for charging any person in that court with selling an article which he had never seen. He would call the attention of the Bench to the words of the Act of Parliament. In Section 6 it was stated that "no person shall sell to the prejudice of the purchaser any article of food, or any drug, which is not of the nature, substance, and quality of the article demanded by such purchaser, under a penalty not exceeding 20*l*." He contended that the purchaser had been supplied with the article which he demanded, and that the alleged adulteration was covered by the sub-section of the Act, which said that no offence should be deemed to have been committed "where any matter or ingredient not injurious to health has been added to food or drug because the same is required for the production or preparation thereof as an article of commerce, and not fraudulently to increase the bulk, weight, or measure of the food or drug, or conceal the inferior quality thereof." That the introduction of sulphuric acid in the preparation of the particular article in question was injurious to health was only Dr. Hill's opinion—a theoretical opinion, which was different from that of Dr. Redwood. Sulphuric acid was necessary in the preparation of the article. Why did not the public ask for flowers of sulphur? Because they would not mix with milk or with water. Dr. Hill had told them that sulphur precipitatum would not mix in the same way, but milk of sulphur would. He should be prepared to rebut the case for the prosecution by calling scientific witnesses who agreed with the opinion of Dr. Redwood, and were prepared to demonstrate its accuracy by experiment in court, if the magistrates desired.

Mr. Alfred Bird, pharmaceutical and analytical chemist, of Worcester Street, Birmingham, was then called. He said he knew the preparations of sulphur. Milk of sulphur was a distinct preparation from sulphur precipitatum. He had known that ever since the time he was an apprentice. He had always sold the two articles as perfectly distinct. Milk of sulphur was mixable in water. It was a very valuable medicine, and was what the public asked for. Milk of sulphur was used in sciatica, hæmorrhoids, and other cases. It was not an impure article. He considered that he should be wrong in selling precipitated sulphur when milk of sulphur was asked for. Chemists were not at liberty to refuse to sell milk of sulphur. He totally disagreed with Dr. Hill's statement. If in his own trade he sold 9 lbs. of precipitated sulphur in a year, he sold tons of milk of sulphur. He had appliances in Court to corroborate his evidence by experiment, if the Bench desired.

Cross-examined: The cheaper article was sold most because it was the most beneficial. Milk of sulphur would mix with water, and was used as a draught. Precipitate of sulphur was only produced as a chemical curiosity, and there was no use specified for it in the London Pharmacopœia. He remembered it once being put down in a prescription, but it was by one of those medical men who did not know that there were two preparations. The component parts of milk of sulphur were about equal portions of sulphate of lime and precipitated sulphur. Witness did not think the sulphate of lime would have a constipating effect. It would be absolutely inert. Sulphate of lime was not the same thing as plaster of Paris. In order to convert it into plaster of Paris the water of crystallisation had to be burnt out.

At this stage, Mr. Croxall said the Bench were of opinion that there were two articles known to the trade as milk of sulphur and sulphur precipitatum, and that the sample sold was a fair sample of milk of sulphur. The summons would, therefore, be dismissed.

Mr. Young applied for costs on behalf of the defendant, but the Bench refused to make any order.

Mr. Wontner then made an application to the Bench with reference to the summons for the sale of cocoa alleged to be adulterated. He stated that the article sold in this case was a packet of the cocoa prepared by James Epps & Co. The packet bore a statement to the effect that pure cocoa was insoluble, and that it was necessary that it should be "combined with just so much loaf sugar and West Indian arrowroot as will effect its perfect incorporation. We guarantee that no other ingredients than those mentioned are used." A short time back a similar case was tried before the Spalding magistrates, and on a conviction resulting an appeal was made to the Court of Common Pleas. Justices Brett and Denman there decided that the article was not an adulterated one, but that the label stated on the face what it was; and they therefore quashed the conviction. The appeal being very recent, and press of business very great, it had not yet found its way into the *Law Journal* or *Law Times*, but it was reported in the *Times* of June 7, 1875, a copy of which he had with much difficulty obtained. Under these circumstances he applied to the Bench to dismiss the summons.

Mr. Seymour said the summons in this case had been taken out without his advice, and he was prepared to withdraw the case.

Mr. Wontner said he had come down, at great expense, to represent the manufacturers of the cocoa, although he nominally appeared for Mr. Sumner. He asked the Bench for costs.

The magistrates consented to the withdrawal of the summons, but declined to give costs.

MEDICAL GLEANINGS.

The Royal Commission "On the Practice of Subjecting Live Animals to Experiments for Scientific Purposes" has finished its investigations and published its report. The tenour of the latter is undoubtedly to exculpate the medical profession from the charges of reckless cruelty which have been brought against it. The Commission will by no means recommend the prohibition of vivisection; the attempt to prevent it, they say, could only be followed by the evasion of the law or the flight of medical and physiological students from the United Kingdom to foreign schools and laboratories, and would, therefore, certainly result in no change favourable to the animals. Nor will they accept the proposal that has been made, "that the object in view shall be some immediate application of an expected discovery to some prophylactic or therapeutic end, and that any experiment made for the mere advancement of science shall be rendered unlawful;" for, as they point out, some of our greatest inventions, as, for example, the electric telegraph, which originated from Galvani's experiments on a frog, and Harvey's discovery of the circulation of the blood, have resulted from experiments not undertaken with these direct aims. But, on the other hand, they remark "that by the use of anæsthetics in humane and skilful hands the pain which would otherwise be inflicted may, in the great majority of cases, be altogether prevented, and in the remaining cases greatly mitigated; that the infliction of severe and protracted agony is in any case to be avoided; that the abuse of the practice by inhuman or unskilful persons—in short, the infliction upon animals of any unnecessary pain—is justly abhorrent to the moral sense of Her Majesty's subjects generally, not least so of the most distinguished physiologists and the most eminent surgeons and physicians; and that the support of these eminent persons, as well as of the general public, may be confidently expected for any reasonable measures intended to prevent abuse." They therefore suggest "the enactment of a law which should vest in the Secretary of State the power of granting licenses to persons desirous of performing experiments upon living animals. The licenses would bear conditions calculated to assure that in no avoidable case should suffering be inflicted; and that, where unavoidable, it should be reduced to a minimum."

We cannot avoid asking what answer these Commissioners would give to another body of agitators, should such arise, who should ask for their opinion on our noble national sports of fox-hunting, coursing, and the like. These gentlemen consider that "the infliction of severe and protracted agony is in any case to be avoided;" "that the infliction upon animals of any unnecessary pain is justly abhorrent to the moral sense of Her Majesty's subjects generally;" and they urge that in no avoidable case should suffering be inflicted. What if this recent attack on the vivisectionists should prove only a cover for a more serious and thoroughly earnest agitation against certain forms of British sport?

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A paper reflecting on the accuracy of dispensing chemists, by Mr. Thompson, of the Royal Institution, Manchester, was on the programme of the last evening meeting of the Pharmaceutical Society. After announcing it the committee withdrew their sanction, and prohibited it, in consequence of "the trivial and insufficient nature of the grounds upon which conclusions were drawn." It is very nice to know that the outer circles of pharmaceutists are thus protected from any contaminating influences, but we should have liked to have heard that paper nevertheless. We have heard that Mr. Thompson had tested 80 prescriptions, two only of which were found correct. Those two, we think, could hardly have been analysed with sufficient care. It was a clever proceeding, however, to drive such a paper from a pharmaceutical company, where its errors, if there were such, could have been confuted, to a "philosophical" society, where it no doubt passed as another sad exposition of the frailties of the commercial classes.

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The swallowing capacity is, no doubt, one which can be cultivated to a reasonable extent. The hungry, growing schoolboy is generally considered to be the most insatiate of the carnivoræ, but his brilliant *élan* in feats of deglutition would be puny in comparison with the trained stomachic discipline of the city alderman. A lunatic, however, who died a short time ago in the Prestwich Asylum would have been more than a match for the two. According to the *London Medical Record* a *post-mortem* examination led to the discovery of no fewer than 1,841 articles in his inside—viz., 1,639 shoemaker's sparables, six 4-inch cut nails, nineteen 3-inch cut nails, eight 2½-inch cut nails, eighteen 2-inch cut nails, forty ½-inch cut nails, seven ⅜-inch cut nails, thirty-nine tacks, five brass nails, nine brass buttons, twenty pieces of buckles, one pin, fourteen bits of glass, ten small pebbles, three pieces of string, one piece of leather three inches long, one piece of lead four inches long, and one American pegging awl—the total weight being 11 lbs. 10 ozs.

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Dr. J. F. Thompson, in the *American Journal of Dental Science*, is cruelly severe on that charming recreation of childhood's days, the habit of sucking the thumb. That indulgence, according to him, leads to "an undue prominence in the anterior incisive aspect of the superior maxillary, with much projection of the teeth, while the lower jaw in these cases is found, so far as relates to its anterior aspects, the reverse of the upper, being flattened, while the teeth incline into the mouth, this being caused by the thumb or knuckles being pressed against the lower teeth, while the inside of the upper part of the thumb is brought against the back of the upper teeth, acting the part of a double lever." We think if these results were pointed out to the youthful delinquents the lesson might induce them to discontinue the practice, and it would certainly be more noble thus to appeal to their reason than to adopt the cowardly trick, which we well remember, of rubbing the end of the thumb with "bitter holloways."

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Dr. A. C. Mackenzie, in the American *Journal of Medical Sciences* (*Medical and Surgical Reporter*, November 27), states that he treats wounds with much success with warm water and a balsamic compound. The warm water not only hastens the exit of disintegrated material, but conveys to the sufferer that soothing effect which heat alone communicates. The formula which he uses is the following:—

℞ Balsam fir
True Venice turpentine
Oil of sweet almond, āā ℥ij.
Add carbolic acid ʒss. previously dissolved in ℥ij. warm glycerine. M.

Apply with a flat camel's hair brush, and inject into the interstices of the wound with a glass syringe, having previously cleansed the wound with very warm water and a bulb-syringe.

Warm water is applied *ad libitum*, and the diseased or injured portion enveloped in flannel cloths, immersed in water as hot as can be borne comfortably.

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The number of students registered in the Paris Faculty of Medicine this year is 6,500, the largest number yet reached. On February 22 the Municipal Council of Paris voted a sum of six millions of francs for the construction of new buildings round the old ones belonging to the Faculty. The property of the buildings now in existence has been given up by the State to the City of Paris, on the express condition that they should always be devoted to the Faculty of Medicine.

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On March 3 a deputation from the London School of Medicine for Women waited upon the Duke of Richmond, President of the Privy Council, to urge on him the claims of women to the right of examination for medical registration. Among the speakers were Mr. Stansfeld, M.P., Mr. Forsyth, Q.C., M.P., Lord Aberdare, Mrs. Garrett-Anderson, Miss Jex-Blake, and Dr. King Chambers. Mr. Forsyth pointed out that no law prohibited the admission of women to the profession. Mrs. Garrett-Anderson explained that the only body that did not profess to be able to exclude women was the Society of Apothecaries, and they practically refused them admission, inasmuch as they would only examine those who were educated at the public medical schools, from which women were excluded. Miss Jex-Blake remarked that the examining boards had assumed the power to refuse to examine women, but it never had been conceded to them by any legal tribnual, except in the case of the Scotch Universities, where a decision was given by a bare majority of the Lords of Session, and on quite different grounds. Mr. Stansfeld referred to the discussion in the Medical Council resulting from the application made by the Duke of Richmond, the conclusion of which was that the council were "not prepared to say that women ought to be excluded from the profession." The Duke of Richmond promised his best attention to the subject.

⁂

Some short time back the Council of the London College of Surgeons arrived at the important decision to admit women to examination for its license in midwifery. That license will entitle them to a place on the medical register, and will give them a legally recognised position as practitioners in the obstetric department of medicine and surgery. The clause in the college charter under which the right to admission has been claimed was, it appears, expressly framed, by the use of the word "persons," to meet the case of female as well as of male practitioners, and the college has been advised that it could not legally refuse to admit duly educated women to examination for this diploma.

⁂

The *Lancet*, commenting on the frequent verdict "Died by the visitation of God," remarks "that every death may be referred to God's visitation, and that a coroner's jury returning this verdict has failed to fulfil its duty. It is the proximate cause of death with which a coroner is concerned, and he should always endeavour to point out as accurately as possible the manner in which God's visitation has been brought about. If such a verdict as 'died by the visitation of God' is to be permitted, the coroner should be able to show where the line is to be drawn between deaths referable to this cause and deaths not so referable. If every sudden death is to be referred to a "special providence," the logical conclusion is, that we must receive them without questioning, and abandon the impiety of coroners' inquiries."

⁂

Under the heading of "The Impending Danger," a writer in the *New York Medical Record* publishes a somewhat sensational article on the consumption of opium in the United States. "America is in peril of becoming a nation of opium inebriates. Tens of thousands of hapless devotees bow at the shrine of this seductive goddess, and from the palace and the poorhouse, the hall and the hovel, is being recruited the increasing host marching downwards with steps slow but sure to death or degradation." The writer appears to think that much of the evil is directly attributable to the frequency with which opiates are prescribed by American physicians; while, the morbid craving having been once established, there is no limit to the amount of the drug which the victims may obtain from dispensing chemists. The natural suggestion, of course, is that the sale of opium should be restricted.

Trade Notes.

Judson's Dyes.—We observe that Messrs. D. Judson & Son, who have done so much to popularise the use of the aniline dyes, have now brought out their series of colours in solid as well as in liquid form, to sell at the same price. The public can therefore choose; with the liquids they get convenience, with the solids economy.

⁂

The Patent Plumbago Crucible Company, of Battersea Works, London, have recently received a considerable order for Furnaces, Muffles, Assay Crucibles, &c., from the University of Michigan, Ann Arbor, United States. We understand the company will make a good display of their manufactures at the "Centennial" at Philadelphia, to which city they not long since supplied a quantity of their Porous Cells to Professor Barker.

⁂

Condy's Ozonised Sea Salt is a novelty which we cannot doubt will make its way very freely in the course of the coming summer. It is a combination of salt with permanganate of potash, and a handful of it dissolved in a bath brings the "flowing billows" nearer home than ever. It gives a delicate pink tint to the water, which passes off after a little while. Meanwhile the ozone is gradually diffusing itself, and the theory is that while the immersed part of the body is strengthened by the salt bath, the inner man is invigorated and refreshed by the inspiration of the life-giving ozone. It is a theory that will attract a great many disciples among the classes who will pay for their faith. This salt is manufactured by Mr. H. Bollmann Condy, of Battersea, and is sold in bottles.

⁂

At a preliminary meeting of the creditors of Mr. Edward Wilson and Mr. Ellis Duckworth Wilson, trading as Edward Wilson & Co., Prestolee and Manchester, manufacturing chemists, held on March 8, a statement of affairs was presented which showed the liabilities to be 116,076*l.* 11*s.*, and the assets 131,099*l.* 12*s.*, showing a surplus of 15,023*l.* 1*s.* A committee was appointed to investigate and report to the first statutory meeting.

⁂

Messrs. W. J. Jamieson, of Broad Street, Golden Square, send us a sample of a thin but exceedingly tough vulcanised india-rubber in sheets, which they supply for the purpose of capping bottles. It is of French manufacture, and is termed Parchmine Colorée. We think the material is not quite new for the purpose, though it may be that the substance offered by Messrs. Jamieson has some novelty in its preparation. For capping purposes this Parchmine is stronger than split skin, is more elastic, is not affected by temperature, and, what is of particular importance, it may be washed when soiled. The article can be had in white or various colours.

⁂

An announcement among our advertisements informs the trade that Mr. Umney, who for many years has controlled Messrs. Herring's laboratories, has become a partner with Messrs. Wright & Layman. Mr. Sellers, until now associated with that firm, retires, and the style is to be in future, Wright, Layman & Umney. We have so frequently had occasion to report Mr. Umney's pharmaceutical papers or his practical remarks in the course of pharmaceutical discussions, that his name cannot but be familiar to all our readers. As specimens of his work in connection with pharmacy we may refer to his criticism on the "Pharmacopœia Appendix," in 1874, which was the promptest and by far the ablest analysis of the "Additions" attempted by any chemist; also to his paper on "Citrate of Lithium" at the last meeting of the Pharmaceutical Conference. Mr. Umney was one of the early ' Bell Scholars," and he has become since, without question, one of our most accomplished pharmaceutists. We are glad to take the opportunity of saying this at a moment when he starts on a new enterprise. In this career Mr. Umney has a fair right to anticipate, what we heartily wish him, a commercial success of the most substantial character. If he becomes the wealthiest of wholesale druggists, the result will only be a fair reward of his thoroughness, ability, and geniality.

⁂

Rimmel's Easter Eggs.—The opportunity afforded by Easter has been seized by Mr. Rimmel in the happiest manner. The old custom of presenting Paschal eggs, which still continues on the Continent, had almost died out in England until Mr. Rimmel hit on the happy thought of making eggs a medium for some of his delicate little luxuries. Accordingly, he now produces in large quantities eggs of various styles and sizes, inside which a small bottle of scent is to be discovered. The cheapest and one of the most successful imitations is a stoneware egg placed in an egg cup, the whole to sell for a shilling. The delusion is perfect until the egg is removed from the cup, when the deception will certainly not prove disappointing except to very hungry persons. From this we come to variously coloured Parian and silver and gold plated eggs, daintily decorated with ribbons. Easter greetings in the form of sachets with crosses and flowers painted on them form an essential part of Mr. Rimmel's stock at this season; or a card and some eggs are combined in a "pic-nic basket." For young ladies of ritualistic tendencies a present of this kind is almost necessary; but we think the most Puritanic would submit with a very good grace to the soothing influences of the perfumery, even if the superstition should be distasteful.

TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the Publisher of THE CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of THE CHEMIST AND DRUGGIST, Colonial Buildings, Cannon Street, London, E.C.," the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL.

About 2 gross 6 and 8 oz. stoppered green flint oval bottles. What offers? Lander, Chemist, Rugby.

Pharmaceutical Journal, from January, 1872, to November, 1875; five missing. 5/193.

River's "Medicine," 1655; London Pharmacopœia (1st), 1618, scarce, curiosity; stamps for particulars. 4/193.

"The Chemist and Druggist," 1871, 1872, 1873, 1874, and 1875. Offers. T. W. Fawcett, Chemist, Armley, Leeds.

Dow's Clark's ice-drink machine, 4 taps, equal to new. Horncastle, 2 Queen Street, Cheapside.

Aitken's "Outlines of the Science and Practice of Medicine," 11*s.* 6*d.* 13/194.

Four 10-gallon show carboys, with colours. Cheap. "D.," 2 St. John's Wood Terrace, N.W.

Garrod's "Materia Medica," third edition, excellent condition, 7*s.* 6*d.* Hodgson, Chemist, Leicester.

Handsome 22-inch globe lamp, ruby glass, on 2-feet ornamental pillar, 2*l.* 10*s.* Driver & Perfect, 2 Seven Sisters Road, N.

Weekly *Pharmaceutical Journals*, from January to December, 1875, complete. Apply to J. Parkes, Atherstone.

17 lbs. vinum ipecac., 1*s.* 6*d.* per lb., part or all. J. Floyd, Bury St. Edmunds.

11 lbs. Gibson's chlorodyne lozenges (new), 20*s.*; Foxe's Key, 4*s.*; 1 dozen (Mallow) condensed milk (fresh), 4*s.* 6*d.* Allatt, Frizington.

A musical box, first-class, with bell accompaniment played by figures, equal to new, cost 18*l.*, price 11*l.* 10*s.*, bargain. "Chemicus," 151 Hoxton Street, London, N.

Six-syrup American drinks machine (Dow's), complete, cheap; spring prescription press; filling and bottling racks, nearly new. F. Wheeler, Guildford.

Evans' Materia Medica Cabinet, with 14 illustrations of poisonous plants, good condition, cost 26*s.* Price 16*s.* G. G., Post Office, Otley, Yorkshire.

Bentley's "Botany," new; Lindley's "Botany"; Epps' "Homœopathic Instructor," 8vo.; Hooper's "Physician's Vade Mecum"; Bowman's "Chemistry"; Fownes' "Chemistry," in good condition, price 1*l.* 12*s.* 6*d.* Address, J. F., 18 High Street, Warwick.

Pharmaceutical Journal, posted Saturday or Monday as received; Lescher's "Elements," last edition, 5*s.*, free. H. O. Brown, Barrow, Ulceby.

To dentists and surgeons. Barth's apparatus for the inhalation of nitrous oxide. Complete and new; cost 6*l.* 15*s.* Smith, Chemist, Barnet.

Analytical balances, grain and gramme weights, complete, in shut-up glass case, good as new. Send offers to S., 2 Ash Tree Villas, Cherry Street, Coventry.

80 boxes of 2*d.* and 3*d.* foreign cigars (in lots), at 10*s.*, 10*s.* 6*d.*, and 12*s.* 6*d.* Send four stamps for samples. A. Hubbard, 59 Stafford Street Walsall.

Pharmaceutical Journals, complete from commencement, first 18 vols. bound; also the two indexes, price 10*l.* 10*s.* Mr. Oldfield, 5 Southbourne Terrace, Bournemouth.

A portable printing press, nearly new, to print 10½ inches by 8, with office of type, complete, price 3*l.* 5*s.* J. Archer, Chemist, Lechdale, Gloucestershire.

Dr. Pouchett's "Universe," 34*s.*; Rhind's "Vegetable Kingdom," 31*s.* 6*d.* (two copies), beautifully bound, quite new, half price. Gill, West Bromwich.

Two show-jars, recently bought, 24 in. high, gilt caps exclusive, York glass, figs. 212, 215; cost 9*l.*; will be sold for 6*l.* Address Dr. Myles, Limerick.

Useful for Minor.—Manuscript notes on chemistry, botany, and materia medica, 3*s.* each, or 8*s.* the lot. H. S. Marshall, care of Mr. W. H. Howard, Crowborough, Sussex.

Botany.—A collection of coloured illustrations of British plants, 2*s.* Specimen, two stamps. Tully, Chemist, Tunbridge Wells.

Binocular microscope, first-class, large, with English objectory apparatus, and beautiful lamp objects, &c., cost 44*l.*, price, 27*l.* 10*s.* "Chemicus," 151 Hoxton Street, London, N.

Four sound gutta-percha carboys, holding 25 gallons each; about 1½ cwt. of muriate of ammonia, a little dusty. To be sold cheap. What offers? Corry & Soper, Shad Thames, London, S.E.

Two show jars, scroll label, tin japanned tops, 22 inches high, with mahogany stands; 2 cylindrical carboys, cut stoppers, 8 inches high. S. Bright, Chemist, &c., 19 Norfolk Square, Brighton.

Bentley's "Botany," latest edition, 10*s.*; Southall's Materia Medica collection, 15*s.*; Attfield's "Chemistry," 7*s.*; Pereira's "Selecta e Prescriptis," 3*s.*, sent free. "Spes," 7 Ogwen Street, West Derby Road, Liverpool.

Dow's Clark's 6-tap ice-cream marble machine in first-class condition; taps, &c., just replated, not been used; cost 40*l.* Space being required, to a quick purchaser, 17*l.*; great bargain. Jasper, 4 Harbour Street, Folkestone.

Valentin's "Text Book of Chemistry," new; Squire's "Companion to British Pharmacopœia," fifth edition; Fresenius' "Chemical Analysis," qualitative, new; "The Chemist and Druggist," for 1875. Warwick, Chemist, Hartlepool.

"The Chemist and Druggist," 1873 to 1875, complete without advertisement sheets, offers wanted; pillar counter scales on stand with drawer, 10*s.*; brass weights, 2*s.*; small cigar case, 4 compartments, 7*s.* 6*d.* 24/191.

What offers for *Pharmaceutical Journal*, post free, on day of publication? Buckmaster's "Chemistry," 2*s.*, new; Wilson's "Anatomists' Vade Mecum," new, published at 14*s.*, 7*s.* A., 228 Essex Road, Islington, N.

First five divisions Muspratt's "Chemistry," new, profusely illustrated, cost 10*s.* 6*d.* each; will take 1 dozen each Holloway's, Scott's, and Cockle's pills. H. Corfe, 4 Jewry Street, Winchester.

Plate-glass counter case, 5 ft. long, 18 in. wide, 2*l.*, in good condition; lamp, similar to Maw's fig. 5, 30*s.*; soda water stand, similar to Maw's fig. 62, 35*s.*; two pill machines, cut 12 and 18 pills, 8*s.* each. J. Feltwell, Chemist, Hammersmith Road, W.

21*s.* the lot, carriage paid. Squire's "Companion;" Royle's "Materia Medica;" Gregory's "Handbook, Chemistry;" Fowne's "Chemistry;" Odling's "Chemistry;" Miller's "Surgery;" all in good condition. Letters only. M. Percy, 24 Whitcomb Street, Leicester Square, London.

Neck pillow, fig. 5 Mather's list, 5*s.*; sp. gr. bottle (1,000 grs.)' with counterpoise, in japanned box, 4*s.*; ¼-plate lens, camera, and stand, excellent, nearly new, cost 3*l.* 17*s.* 6*d.*, 2*l.*, or offers; ½-plate camera and lens, good, 1*l.*; 7 forceps, 2 keys and claws, 9*s.*, cheap. A. J. Appleton, Sheffield.

Three show carboys, 3 gallons, 1*l.*; mahogany show stand, similar to Maw's fig. 54, 5 shelves, in good condition, 2*l.*; six 1-lb. syrup bottles, 4*s.* 6*d.*; about 30 stoppered shop rounds, 4-oz. to 1-lb., 6*d.* each; 20 blue shop jars, 4-oz. to 1-lb., 8*s.*; tincture press, 7*s.*; six 2-lb. glass jars, japanned lids, 7*s.* 6*d.* Tomlin, Chemist, Barnsley.

British Pharmaceutical Conference books for 1872–73; British Pharmacopœia, 1874; Mulligan's "Celsus;" *Pharmaceutical Journal*, bound, for 1858–59, 1871–72, 1872–73, 1873–74; ditto, unbound, for 1874–75, and July, 1875, to January, 1876, all ready for the binders. Apply to W. Brewster, Chemist, Market Place, Kingston-on-Thames.

0 lbs. aloes Barb. opt., 4 lbs. ol. lavand. exot. opt., 3 lbs. essence pineapple, 5 lbs. essence strawberry, 1¼ lbs. essence raspberry, 8 ozs. essence jargonelle, 3 lbs. essence Zingiberis opt., warranted all good and genuine. Offers for lot or part requested. Also a very strong brass pump, weighing 14 lbs., in working order, has been used for paraffin oil, price 15*s.* Sheel, Low Fell, Gatcshead-on-Tyne.

Abel & Bloxam's "Chemistry," Fowne's "Chemistry," Galloway's "Chemistry," Heaton's "Chemistry," Thomas's "Practice of Physic," Thomson's "Materia Medica," British Pharmacopœia, 1864, British Pharmacopœia, 1867, Owen's "Conspectus," Pereira's "Selecta e Præscriptis," Beasley's "Receipts." Offers wanted. Address, Barry, Tavistock Place, Sunderland.

Six dozen 6*d.* feeders (Mather's Princess shape) in 1 dozen boxes for 19*s.*; ½ dozen 2*s.* 6*d.* Hibbert's health giving saline, 9*s.*; 1 dozen 1*s.* canisters Chapman's entire wheat flour, 7*s.*; ½ dozen 5*s.* Comaline hair restorer, 12*s.*; ½ dozen 1*s.* 6*d.* Austin's electro gold solution, 3*s.* 6*d.*; two 2*s.* 9*d.* Fenning's lung healer, 3*s.* John Staley, 311 Chester Road, Manchester.

Hobert's patent tea mill, 20*s.*; standard imperial bushel measure, in copper, spirit measure shape, with 1½-inch tap, weight about 30 lbs., 40*s.*; three 5-gallon stone Woulfe's bottles, 3 necks each, and ground for taps at bottom, with zinc cases, 10*s.* each; 1½-gallon very stout iron boiler or digester, with round bottom, safety valve, and weights, &c., in an iron case, with gas underneath, 20*s.* Wiggen, St. Matthews, Ipswich.

All carriage paid. Pereira's "Materia Medica" (Farre), 1865, 8*s.* 6*d.*; Dalton's "Human Physiology," 1867, 5*s.*; Flint's "Heart Disease," 5*s.*; Thomson's "London Dispensatory," 5*s.*; Graham's "Chemistry," 3*s.*; Jahr's "Manual, Homœopathic Medicine," 2 vols., morocco, 7*s.* 6*d.*; "Harveian Orations," 8 vols., new, 5*s.* 6*d.*; Gregory's "Organic Chemistry," 2*s.* 6*d.*; Watson's "Practice of Physic," 2 vols., 3rd edition, 7*s.* 6*d.*; Royle's "Materia Medica," 5*s.* (published at 12*s.* 6*d.*); Churchill's "Midwifery," illustrated, 3*s.* 6*d.*; Mackenzie's "Use of the Laryngoscope," 3*s.*; Johnson's "Epidemic Diarrhœa," 2*s.*; Faraday's "Chemical Manipulation," very nice copy, 3rd edition, scarce work, 15*s.* By letter only. M. Percy, 24 Whitcomb Street, Leicester Square, London.

Four cwts. lump yellow ochre, two dozen 6-oz. square white glass bottles, wide necks, boxwood tops; 1½ dozen do. 4-oz.; 1½ dozen shilling Day & Martin's liquid blacking; best black twill oxygen gas bag, with brass stopcock, for lime light, size 36 by 26 by 18, nearly new; pressure boards for above, cast-iron retort, screw tube for making oxygen; safety oxy-hydrogen burner; all in good condition. Offers wanted. Ellwood, Chemist, Leominster.

Handsome mahogany wall-fitting, 10½ feet long, 3 feet high, with shelving under, mahogany carved brackets, &c.; handsome 12 feet 2 long mahogany moulded-top counter, with carved trusses, &c., fitted with drawers; handsome mahogany plate-glass dispensing screen, 8 feet long, as Treble's 136; 5 feet long mahogany dispensing screen; two mahogany show-cases with desks, as fig. 39 Maw's; three upright mahogany show-cases, various heights, as fig. 39 Maw's; mahogany cigar case, as 53 Maw's, 3 compartments; 3 mahogany counter desks; 30 bent and flat mahogany counter cases, various sizes; 13 nests mahogany gold-labelled shop drawers; 10 mahogany wall cases, Maw's fig. 2; half-gallon tincture press; handsome large shop lamp and bracket, as Maw's fig. 5. Lloyd Rayner, 333 Kingsland Road, London, N.

800 gold-labelled second-hand shop bottles, various sizes; 36 blue 4-lb. shop jars; 36 blue 3-lb. shop jars; 24 blue 1-lb. shop jars; 36 blue ½-lb. shop jars; 3 handsome gold-labelled show-jars, with gilt glass covers, as fig. D Maw's; six glass show-jars, as fig. A Maw's; four 2-gallon, three 3-gallon, six 4-gallon, six 6-gallon, four 8-gallon pear-shape window carboys; handsome new specie jar, with royal arms and ornamental gilt glass cover, 27 inches high, 70*s.*; five specie jars, with scroll gold labels, 24 inches high, 30*s.* each; six gold-labelled lozenge jars, with cut-glass knobs, as Maw's fig. 2; handsome nearly new mahogany wall-fitting, 10½ feet long, with shelving above, with cornice and mahogany turned columns, carved brackets, &c., about 8 feet high, suitable for chemist, grocer, tobacconist, &c.; entire fittings of a chemist's shop for disposal—a bargain. Lloyd Rayner, 333 Kingsland Road, London.

WANTED.

Pill machine, to cut 24 pills, with reversible plates, 3 and 5 grain. J. Feltwell, chemist, Hammersmith Road, W.

Pindar's or other good maker's rotary pill machine. Smith Chemist, Rye, Sussex.

Proctor's "Practical Pharmacy." Cheap for cash. W. Richards, Ripon.

Soda water rack for 6 dozen, Burrows'. Lowest price, Wildsmith, Druggist, Leeds.

Two 6, 8, or 12-gal. copper cylinders in perfect condition. Lowest cash price, Amicus, 4 Harbour Street, Folkestone.

Vessel for holding syrup, 5 to 12 gallons. enamelled iron preferred. F. Wheeler, Guildford.

Shop lamp, similar to Maw's fig. 5 or 6. Price, condition, B., 4 Brunswick Street, Whitby.

A good binocular microscope; state price, maker's name, and how long it has been in use. 11/199.

Ergot of rye.—Any quantity, in good condition. Send sample, price, and quantity, to Curtis & Co., 48 Baker Street, W.

Half-gallon tincture press, in good order; also three or four 40-oz. patent oil bottles. State lowest price to Hardy, Bishop's Stortford.

Dispensing screen, as Maw's fig. 40 or 164, 4 feet 6 inches long, 27 inches high, 6 inches deep. Jones, Chemist, Treherbert, Pontypridd.

"The Chemist and Druggist" for August, 1863; double price will be given. Address A. B. C., Sussex House, Perry Vale, Forest Hill, Kent.

Lescher's "Elements of Pharmacy," latest edition. State price and condition to A. J. Wolstenholme, Eastbank Street, Southport.

Show jar for window, about 30 inches high, as Maw's fig. 20. Two 6 or 8 gallon swan-neck show carboys; state height to top of neck; must be in first-class condition. Also dispensing scales, composition mortars, pill machines, &c. State price and sizes to "Pharmacist," 77 Derby Road, Kirkdale, Liverpool.

GAZETTE.

BANKRUPT.

Price, George, Talbot Street, Dublin, druggist. Feb. 22.

LIQUIDATIONS.

(By arrangement or composition.)

Notices of first meetings have been issued *in re* the following estates. The dates are those of the petitions :—

Fleetwood, Thomas, Widnes, near Warrington, Lancashire, chemical manufacturer. Feb. 15.

Goulden, Henry W., 2 King Street, High Street, Kensington, and Kensington Infirmary, dispenser. March 1.

Herring, John & John C., trading as Herring & Son, Sutton, lavender and mint growers, late coal merchants. Feb. 22.

Hobbs, James, High Street, Ryde, medical botanist. Feb. 16.

Hodder, Alfred, Dunstable Terrace, Marsh Gate, Richmond, chemist, now temporarily at Old Bell Hotel, Holborn. Feb. 8.

Howard, Henry, Weston-super-Mare, chemist. Feb. 23.

Jackson, Josiah, Humberston Road, Leicester, chemist. Feb. 19.

Porter, Charles, Digbeth, Birmingham, surgeon. Feb. 15.

Rawson, Frederick G., Lincoln, chemist. Feb. 24.

Wilson, Edward & Ellis D., trading as Edward Wilson & Co., Prestolee and Manchester, manufacturing chemists. Feb. 23.

Wilson, Edward, Prestolee and Manchester, manufacturing chemist (separate creditors). March 2.

Yorath, Christopher, Bute Street, Cardiff, chemist. Feb. 29.

DIVIDENDS.

Helsdon, Frederick A. (Liq.), North Walsham, Norfolk, surgeon. 1st and final div. 1*s.* 5*d.*; J. C. Chittock, Bank Street, Norwich.

Kimpton, John W. (Bkt.), Iffley Road, Oxon, surgeon. 1st div. 1*s.* 6*d.*; P. Paget, Bankruptcy Court, Lincoln's Inn Fields.

Lundy, Louis Francis (Bkt.), Feltham, surgeon. 1st div. 1*s.* 11*d.*; P. Paget, Bankruptcy Court, Lincoln's Inn Fields.

PARTNERSHIPS DISSOLVED.

Bellyse & Hughes, Andlem, surgeons.

Foster & Else, Brighton, druggists.

Gallimore & Ward, Penistone, surgeons.

Kelly & Clapperton, Market Deeping, surgeons.

Lewis, F., & Co., Fleet Street, Dublin, perfumers. Jan. 1. As regards Frederick Lewis.

Lindsay, J. B., & Co., Irvine, chemical manufacturers. Dec. 15. Debts by John B. Lindsay, who continues the business.

Moffatt & Carson, Manchester, chemists.

Onion & Onyon, Hill Street, Peckham, and Rye Lane, Peckham, anodyne manufacturers.

Raimes, Blanshards & Co., wholesale druggists, Edinburgh; so far as regards R. Raimes.

Readman & Fulton, Kirkintilloch and Glasgow, manufacturing chemists, Dec. 31. Debts by J. B. Readman, who continues the business.

Sandiland & Hall, Southgate Road, surgeons.

White & White, Rawmarsh, near Rotherham, chemical manufacturers.

PATENTS

[The following list has been compiled expressly for The Chemist and Druggist by L. de Fontainemoreau & Co., Patent Agents, 4 South Street, Finsbury, London; 10 Rue de la Fidélité, Paris; and 33 Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following :—

4224. R. Rendle, of Camden Town, Middlesex. Improvements in the mode of bottling liquids, and in apparatus therefor. Dated December 6, 1875.

1876.

24. T. Sutcliffe and J. Fewings, both of Barnsley, Yorkshire. Improvements in apparatus and stoppers to be used for bottling aërated or other liquids. Dated January 3, 1876.

41. P. Gaskill, of Birmingham. Improvements in apparatus for washing bottles. Dated January 4, 1876.

78. J. Gillies, of Glasgow, Lanarkshire, N.B. Improvements in machinery or apparatus for charging and corking bottles or other vessels with aërated liquids. Dated January 7, 1876.

125. W. P. Cherry and C. E. Cherry, of Hull, Yorkshire. Improvements in stoppers for bottles and similar articles, and means for permanently connecting them to the same. Dated January 11, 1876.

181. F. T. Bond, of Gloucester, Gloucestershire. Improvements in filtering and purifying water and other liquids, and in apparatus for that purpose. Dated January 18, 1876.

307. J. Lewis, of Merthyr Tydfil, Glamorganshire. Improvements in apparatus for closing or stoppering of bottles containing gaseous or aërated liquids. Dated January 26, 1876.

405. H. Baggeley, of Fulham, Middlesex. An improved compound, chiefly designed for the manufacture of crucibles, retorts, and other vessels and apparatus to be employed for chemical purposes. Dated February 1, 1876.

Letters Patent have been granted for the following :—

2815. H. A. Dufréné, of 10 Rue de la Fidélité, Paris. An improved process for treating sea wrack or other marine plants. Dated August 11, 1875.

2835. J. Lingard, of Salford, Lancashire. Improved stoppers for bottles containing aërated waters, and in apparatus for filling the bottles with aërated liquids. Dated August 11, 1875.

3246. F. W. Schreiber, of London. Improvements in apparatus for capsuling bottles and similar articles. Dated September 16, 1875.

4391. M. Prentice, of Stowmarket, Suffolk. Improvements in apparatus for concentrating sulphuric acid, saline, and other solutions. Dated December 18, 1875.

Specifications published during the month :—

Postage 1*d.* each extra.

1875.

1859. W. Netherwood. Bottles and stoppers. 6*d.*

2079. H. J. Cole. Closing bottles. 8*d.*

2217. N. Thompson. Stoppers for bottles. 6*d.*

2338. D. Rylands. Stoppers for bottles, &c. 4*d.*

2446. T. M. Jane. Syphon taps or valves for aërated liquids. 8*d.*

2003. H. Deacon. Manufacture of chlorine. 4*d.*

Marriage.

Griffiths—Hallett.—On February 23, H. W. Griffiths, chemist and dentist, Merthyr Tydvil, to Hannah Giffard, second daughter of the late Joseph Hallett, Esq., Hurst House, Martock, Somerset.

Death.

Hooker.—On January 25, Mr. Frederick Hooker, chemist and druggist, of Kingswinford. Aged 40 years.

Monthly Price Current.

The prices quoted in the following list are those actually obtained in Mincing Lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.

	1876.					1875.				
	s.	d.		s.	d.	s.	d.		s.	d.
ACIDS—										
Acetic .... per lb.	0	4	to	0	4½	0	4	to	0	0
Citric .... ,,	2	10	..	2	10½	4	0	..	0	0
Hydrochlor...... per cwt.	5	0	..	7	0	4	0	..	7	0
Nitric .... per lb.	0	5	..	0	5½	0	5	..	0	5½
Oxalic .... ,,	0	5	..	0	0	0	6¼	..	0	7
Sulphuric ...... ,,	0	0¾	..	0	1	0	0¾	..	0	1
Tartaric crystal.. ,,	1	6	..	0	0	1	7	..	0	0
powdered ,,	1	6	..	0	0	1	7	..	0	0
ANTIMONY ore ...... per ton	280	0	..	300	0	250	0	..	270	0
crude .. per cwt.	38	0	..	0	0	40	0	..	0	0
star...... ,,	59	0	..	0	0	52	0	..	53	0
ARSENIC, lump ...... ,,	28	6	..	29	0	25	0	..	0	0
powder.... ,,	13	3	..	0	0	14	6	..	0	0
BRIMSTONE, rough ... per ton	145	0	..	0	0	150	0	..	160	0
roll .. per cwt.	10	9	..	11	0	10	0	..	0	0
flour.... ,,	14	0	..	14	6	11	6	..	12	6
IODINE, dry .... per oz.	0	5¾	..	0	6	0	8	..	0	0
IVORY BLACK, dry .. per cwt.	8	6	..	0	0	8	6	..	0	0
MAGNESIA, calcined.. per lb.	1	6	..	0	0	1	6	..	0	0
MERCURY .... per bottle	200	0	..	0	0	400	0	..	0	0
MINIUM, red ...... per cwt.	24	6	..	25	0	21	6	..	0	0
orange .. ,,	37	0	..	0	0	36	0	..	0	0
PRECIPITATE, red . per lb.	4	6	..	0	0	6	8	..	0	0
white ,,	4	5	..	0	0	6	7	..	8	0
PRUSSIAN BLUE .. ,,	0	0	..	0	0	0	0	..	0	0
SALTS—										
Alum .... per ton	145	0	..	155	0	165	0	..	175	0
powder...... ,,	160	0	..	167	6	185	0	..	0	0
Ammonia :										
Carbonate ...... per lb.	0	5	..	0	0	0	7	..	0	7¼
Hydrochlorate, crude, white .... per ton	0	0	..	0	0	640	0	..	0	0
British (*see* Sal Am.)										
Sulphate........ per ton	375	0	..	380	0	355	0	..	365	0
Argol, Cape ...... per cwt.	92	0	..	100	0	90	0	..	97	0
Red........ ,,	74	0	..	91	0	76	0	..	90	0
Oporto, red. ,,	33	6	..	34	0	33	0	..	34	0
Sicily ...... ,,	0	0	..	0	0	60	0	..	62	0
Ashes (*see* Potash and Soda)										
Bleaching powd... per cwt.	8	0	..	0	0	11	0	..	0	0
Borax, crude...... ,,	32	0	..	49	0	40	0	..	55	0
British refnd. ,,	53	0	..	0	0	56	0	..	0	0
Calomel .... per lb.	4	0	..	0	0	5	10	..	0	0
Copper :										
Sulphate .... per cwt.	24	3	..	24	6	25	6	..	26	0
Copperas, green.. per ton	65	0	..	70	0	65	0	..	70	0
Corrosive Sublimate p. lb.	3	5	..	0	0	5	8¾	..	0	0
Cr. Tartar, French, p. cwt.	109	0	..	110	0	113	6	..	114	0
brown ,,	90	0	..	100	0	92	6	..	93	0
Epsom Salts .... per cwt.	5	3	..	6	6	5	6	..	6	6
Glauber Salts .... ,,	4	6	..	5	6	6	6	..	7	0
Lime :										
Acetate, white, per cwt.	11	0	..	20	0	13	0	..	21	0
Magnesia : Carbonate ,,	42	6	..	45	0	42	6	..	45	0
Potash :										
Bichromate .... per lb.	0	5	..	0	5	0	6½	..	0	0
Carbonate :										
Potashes, Canada, 1st sort ...... per cwt.	27	6	..	0	0	35	6	..	0	0
Pearlashes, Canada, 1st sort ...... per cwt.	30	0	..	0	0	37	6	..	0	0
Chlorate ...... per lb.	0	9½	..	0	0	0	10	..	0	0
Prussiate .... ,,	1	0	..	0	0	1	2	..	1	3
red .... ,,	3	2	..	3	3	3	2	..	3	3
Tartrate (*see* Argol and Cream of Tartar)										
Potassium :										
Chloride...... per cwt.	7	0	..	0	0	7	0	..	0	0
Iodide .... per lb.	8	0	..	8	3	9	6	..	9	8
Quinine :										
Sulphate, British, in bottles ...... per oz.	6	10	..	7	0	6	10	..	7	0
Sulphate, French ,,	6	6	..	0	0	6	5	..	0	0
Sal Acetos ...... per lb.	0	8	..	0	8½	0	9½	..	0	10
Sal Ammoniac, Brit. cwt.	44	0	..	45	0	44	0	..	45	0
Saltpetre :										
Bengal, 6 per cent. or under ...... per cwt.	18	6	..	19	0	20	6	..	21	3
Bengal, over 6 per cent. per cwt.	17	9	..	18	3	19	0	..	20	3
British. refined ,,	21	9	..	23	6	24	0	..	24	9
Soda: Bicarbonate, p. cwt.	11	3	..	11	6	14	0	..	14	6
Carbonate :										
Soda Ash .. per deg.	0	2	..	0	0	0	2⅛	..	0	0
Soda Crystals per ton	85	0	..	87	6	95	0	..	0	0
Hyposulphite, per cwt.	0	0	..	0	0	0	0	..	0	0
Nitrate ...... per cwt.	11	6	..	0	0	13	0	..	0	0
SUGAR OF LEAD, White cwt.	40	0	..	0	0	42	0	..	44	0
SUGAR OF LEAD, Brown, cwt.	27	0	..	0	0	38	0	..	39	0
SULPHUR (*see* Brimstone)										
VERDIGRIS .... per lb.	1	1	to	1	5	1	1	to	1	5
VERMILION, English ,,	3	0	..	0	0	5	2	..	0	0
China ,,	0	0	..	0	0	0	0	..	0	0

DRUGS.

	1876.					1875.				
	s.	d.		s.	d.	s.	d.		s.	d.
ALOES, Hepatic .... per cwt.	60	0	..	160	0	60	0	..	180	0
Socotrine .. ,,	65	0	..	205	0	100	0	..	200	0
Cape, good.. ,,	36	0	..	39	0	36	0	..	89	0
Inferior .... ,,	20	0	..	35	0	29	0	..	35	0
Barbadoes .. ,,	40	0	..	210	0	49	0	..	185	0
AMBERGRIS, grey........ oz.	55	0	..	60	0	50	0	..	60	0
BALSAM—										
Canada............ per lb.	1	3	..	0	0	1	9	..	2	0
Capivi .... ,,	2	4	..	2	6	2	10	..	3	0
Peru .... ,,	4	10	..	5	0	6	0	..	6	6
Tolu.............. ,,	6	0	..	6	3	5	9	..	6	0
BARKS—										
Canella alba...... per cwt.	0	0	..	0	0	16	0	..	27	0
Cascarilla .... ,,	24	0	..	26	0	20	0	..	28	0
Peru, crown & grey per lb.	1	4	..	3	4	0	11	..	2	5
Calisaya, flat ,,	2	0	..	4	0	3	0	..	3	6
,, quill ,,	2	0	..	4	0	3	0	..	4	2
Carthagena ,,	1	5	..	2	2	0	6	..	1	11
E. I. .... ,,	1	4	..	4	7	1	0	..	4	0
Pitayo ...... ,,	0	7	..	1	9	0	4	..	2	0
Red .... ,,	1	8	..	4	6	1	0	..	4	0
Buchu Leaves........ ,,	0	1	..	1	1	0	2	..	1	0
CAMPHOR, China .. per cwt.	69	0	..	0	0	75	0	..	0	0
Japan .. ,,	72	6	..	0	0	77	6	..	0	0
Refin. Eng. per lb.	1	1	..	0	0	1	1½	..	0	0
CANTHARIDES........ ,,	3	8	..	4	0	3	0	..	5	0
CHAMOMILE FLOWERS p. cwt.	35	0	..	60	0	35	0	..	50	0
CASTOREUM .... per lb.	6	0	..	26	0	6	0	..	24	0
DRAGON'S BLOOD, lp. p. cwt.	110	0	..	200	0	80	0	..	220	0
FRUITS AND SEEDS (*see also* Seeds *and* Spices).										
Anise, China Star per cwt.	102	6	..	105	0	110	0	..	0	0
Spanish, &c. ,,	28	0	..	48	0	15	0	..	28	0
Beans, Tonquin.... per lb.	1	6	..	4	6	2	0	..	3	0
Cardamoms, Malabar good .... ,,	4	0	..	5	0	4	11	..	5	6
inferior.... ,,	1	0	..	3	9	2	0	..	4	10
Madras.... ,,	1	10	..	3	6	2	9	..	4	0
Ceylon .... ,,	5	5	..	5	8	5	6	..	5	8
Cassia Fistula.... per cwt.	8	0	..	14	6	12	6	..	15	0
Castor Seeds .... ,,	5	0	..	10	6	7	0	..	11	6
Cocculus Indicus ,,	13	0	..	16	0	14	0	..	16	0
Colocynth, apple .. per lb.	0	6	..	0	11	0	11	..	1	0
Croton Seeds .... per cwt.	44	0	..	45	0	44	0	..	0	0
Cubebs.......... ,,	30	0	..	0	0	21	6	..	23	0
Cummin .... ,,	19	0	..	24	0	15	0	..	20	0
Dividivi .... ,,	12	0	..	16	0	11	0	..	15	0
Fenugreek ...... ,,	18	0	..	22	0	8	0	..	16	0
Guinea Grains .. ,,	21	0	..	0	0	25	0	..	0	0
Juniper Berries ,,	7	0	..	10	0	9	0	..	10	6
Nux Vomica.. .. ,,	7	0	..	12	6	9	0	..	14	0
Tamarinds, East India ,,	13	0	..	20	0	18	0	..	20	0
West India ,,	9	0	..	16	0	11	0	..	18	0
Vanilla, large .... per lb.	50	0	..	60	0	60	0	..	72	0
inferior ,,	21	0	..	30	0	50	0	..	59	0
Wormseed per cwt.	0	0	..	0	0	0	0	..	0	0
GINGER, Preserved, per lb.	0	5¼	..	0	10	0	6½	..	0	7
HONEY, Chili .... per cwt.	35	0	..	54	0	44	0	..	62	0
Jamaica ,,	44	0	..	53	0	48	0	..	58	6
Australian ,,	43	0	..	55	0	40	0	..	56	0
IPECACUANHA .... per lb.	3	8	..	4	6	4	0	..	4	8
ISINGLASS, Brazil.. ,,	2	0	..	4	9	3	2	..	5	1
Tongue sort ,,	2	6	..	5	4	3	0	..	5	8
East India ,,	1	0	..	5	0	1	0	..	5	6
West India ,,	4	0	..	4	6	4	6	..	5	0
Russ. long staple	10	0	..	14	0	8	6	..	13	0
,, inferior	0	0	..	0	0	4	0	..	8	0
,, Simovia	3	0	..	3	10	3	3	..	5	0
JALAP, good...... ,,	0	8	..	0	10	0	9	..	0	10
infer. & stems ,,	0	6	..	0	7	0	8	..	0	9
LEMON JUICE .... per degree	0	1	..	0	2	0	2¾	..	0	0
LIME JUICE........ per gall.	1	6	..	2	0	1	6	..	2	0
LIQUORICE, Spanish per cwt.	0	0	..	0	0	40	0	..	70	0
Liquorice Root ,,	16	0	..	38	0	11	0	..	16	0
MANNA, flaky ...... per lb.	5	6	..	6	0	2	6	..	3	0
small ...... ,,	1	6	..	1	9	1	2	..	1	5
MUSK, Pod.......... per oz.	15	0	..	50	0	20	0	..	45	0
Grain........ ,,	37	0	..	62	0	46	0	..	60	0
OILS (*see also separate list*)										
Almond, expressed per lb.	1	2	..	0	0	1	0	..	0	0
Castor, 1st pale.... ,,	0	3¾	..	0	4	0	5	..	0	5¾
second .... ,,	0	3¼	..	0	3½	0	4	..	0	4½
infer. & dark ,,	0	3	..	0	0	0	4	..	0	4¼
Cod Liver ...... per gall.	3	4	..	6	6	5	0	..	7	0
Croton .... per oz.	0	2½	..	0	0	0	3	..	0	4
Essential Oils :										
Almond .... per lb.	24	0	..	25	0	22	0	..	0	0
Anise-seed ...... ,,	6	9	..	0	0	9	0	..	9	0
Bay .... per cwt.	0	0	..	0	0	65	0	..	70	0
Bergamot ...... per lb.	10	0	..	15	0	10	0	..	25	0
Cajeput...... per bottle	2	9	..	3	0	2	4	..	2	8
Caraway........ per lb.	9	0	..	9	3	5	3	..	6	0
Cassia .... ,,	3	10	..	4	0	4	8	..	0	0
Cinnamon ...... per oz.	2	6	..	6	6	1	0	..	7	0
Cinnamon-leaf .. ,,	0	2	..	0	3¼	0	1	..	0	3
Citronelle ...... ,,	0	1⅞	..	0	2	0	1⅞	..	0	2
Clove .... per lb.	9	3	..	9	6	10	6	..	10	9
Juniper .... ,,	1	10	..	0	0	1	3	..	2	0
Lavender ...... per lb.	1	8	..	7	0	1	10	..	5	0
Lemon.......... ,,	7	0	..	9	6	7	0	..	11	6

	1876.			1875.		
Essential Oils, *continued*:—	*s. d.*		*s. d.*	*s. d.*		*s. d.*
Lemongrass ....per oz.	0 2½	..	0 2⅝	0 2¾	..	0 2⅞
Neroli .... ,,	3 0	..	6 6	0 4	..	3 0
Nutmeg .... ,,	0 7	..	0 0	0 7	..	0 8
Orange..........per lb.	6 0	..	9 0	8 0	..	10 0
Otto of Roses....per oz.	13 0	..	25 0	15 0	..	22 0
Patchouli ...... ,,	2 0	..	3 6	2 9	..	4 0
Peppermint:						
American ....per lb.	16 0	..	17 0	22 0	..	24 0
English ...... ,,	32 0	..	33 0	32 6	..	36 0
Rosemary ...... ,,	2 0	..	2 6	1 4	..	1 10
Sassafras ...... ,,	0 0	..	0 0	2 0	..	3 0
Spearmint ...... ,,	14 0	..	16 0	6 0	..	18 0
Thyme.......... ,,	0 0	..	0 0	1 9	..	2 0
Mace, expressed ..per oz.	0 6	..	0 10	0 3	..	0 3½
OPIUM, Turkey ......per lb.	19 6	..	21 6	36 0	..	38 0
inferior ...... ,,	14 0	..	18 0	20 0	..	35 0
QUASSIA (bitter wood) per ton	100 0	..	200 0	0 0	..	0 0
RHUBARB, China, good and fine ....per lb.	2 10	..	4 8	1 11	..	5 9
Good, mid. to ord. ,,	0 9	..	2 4	0 3	..	1 6
Dutch trimmed ,,	0 0	..	0 0	0 0	..	0 0
Russian .... ,,	0 0	..	0 0	0 0	..	0 0
ROOTS—Calumba..per cwt.	28 0	..	31 0	17 0	..	20 0
China .... ,,	19 6	..	24 0	18 0	..	20 0
Galangal.......... ,,	19 0	..	22 0	20 0	..	25 0
Gentian .... ,,	23 0	..	24 0	17 0	..	19 0
Hellebore .... ,,	0 0	..	0 0	30 0	..	33 0
Orris .... ,,	26 0	..	75 0	30 0	..	70 0
Pellitory .... ,,	0 0	..	0 0	38 0	..	39 0
Pink ....per lb.	0 0	..	0 0	0 10	..	1 3
Rhatany.......... ,,	0 4	..	1 0	0 4	..	2 0
Seneka.......... ,,	3 9	..	4 3	3 7	..	4 0
Snake .... ,,	0 7	..	0 8	1 0	..	1 9
SAFFRON, Spanish .. ,,	31 0	..	36 0	18 0	..	23 0
SALEP ....per cwt.	0 0	..	0 0	170 0	..	200 0
SARSAPARILLA, Lima per lb.	0 6	..	0 0	0 6	..	0 9
Para.............. ,,	0 0	..	0 0	1 0	..	1 3
Honduras .... ,,	1 3	..	1 9	1 7	..	1 11
Jamaica .... ,,	2 0	..	3 0	1 9	..	2 6
SASSAFRAS ....per cwt.	0 0	..	0 0	13 0	..	14 0
SCAMMONY, Virgin ..per lb.	30 0	..	45 0	25 0	..	36 0
second & ordinary ,,	8 0	..	24 0	7 0	..	24 0
SENNA, Bombay .... ,,	0 1	..	0 4	0 1	..	0 5
Tinnivelly .... ,,	0 2	..	1 3	0 1	..	0 8
Alexandria........ ,,	0 4½	..	2 8	0 3½	..	1 5
SPERMACETI, refined ,,	1 6	..	0 0	1 2	..	1 3
American .... ,,	1 2	..	0 0	1 0	..	1 1
SQUILLS .... ,,	0 3	..	0 4	0 1¾	..	0 3

GUMS.

	£ s.		£ s.	£ s.		£ s.
AMMONIACI drop .. per cwt.	1 10	..	2 11	4 5	..	1 15
lump.. ,,	1 0	..	1 9	3 0	..	4 0
ANIMI, fine washed ,,	10 0	..	10 10	12 0	..	13 10
bold scraped ,,	8 15	..	9 15	10 10	..	11 15
sorts ...... ,,	6 0	..	8 5	6 10	..	10 15
dark ...... ,,	3 5	..	6 10	4 10	..	5 10
ARABIC, E.I., fine pale picked .. ,,	3 5	..	3 15	2 18	..	3 10
srts., md. to fin. ,,	1 8	..	3 2/6	1 16	..	2 16
garblings .. ,,	1 2	..	2 3	0 19	..	1 10
TURKEY, pick. gd. to fin. ,,	6 0	..	9 0	7 0	..	11 0
second & inf. ,,	2 10	..	5 10	3 0	..	6 15
in sorts .. ,,	1 10	..	2 0	1 10	..	2 15
Gedda .... ,,	1 2	..	1 6	1 0	..	1 8
BARBARY, white .. ,,	0 0	..	0 0	0 0	..	0 0
brown .. ,,	1 9	..	1 16	1 6	..	1 12
AUSTRALIAN...... ,,	1 17	..	2 6	1 4	..	2 8
ASSAFŒTIDA, cm. to fin ,,	0 18	..	1 16	0 9	..	2 4
BENJAMIN, 1st & 2nd ,,	8 0	..	29 0	20 0	..	39 0
Sumatra 1st & 2nd ,,	7 10	..	12 0	7 10	..	12 0
3rd	3 10	..	5 0	2 7/6	..	4 5
COPAL, Angola red ,,	6 0	..	6 15	5 10	..	5 15
Benguela ,,	4 0	..	5 0	3 10	..	4 10
	s. d.		*s. d.*	*s. d.*		*s. d.*
Sierra Leone, per lb.	0 7½	..	0 11	0 4½	..	0 10½
Manilla....per cwt.	15 0	..	27 0	35 0	..	40 0
DAMMAR, pale .... ,,	57 0	..	60 0	0 0	..	0 0
Singapore .... ,,	57 0	..	60 0	55 0	..	54 0
EUPHORBIUM .... ,,	12 0	..	20 0	11 0	..	15 0
GALBANUM .... per lb.	1 0	..	1 6	1 6	..	2 0
GAMBOGE, pckd. pipe per cwt.	180 0	..	235 0	180 0	..	280 0
GUAIACUM ....per lb.	0 6	..	2 0	0 8	..	2 6
KINO..............per cwt.	50 0	..	80 0	60 0	..	90 0
KOWRIE, rough .. ,,	32 0	..	50 0	30 0	..	50 0
scraped sorts ,,	50 0	..	68 0	51 0	..	67 0
MASTIC, picked ....per lb.	4 0	..	5 8	4 6	..	6 0
MYRRH, gd. & fine per cwt.	172 6	..	280 0	119 0	..	280 0
ord. to fair.... ,,	65 0	..	172 0	80 0	..	115 0
OLIBANUM, p. drop ,,	58 0	..	60 0	60 0	..	68 0
amber & ylw. ,,	45 0	..	55 0	53 0	..	60 0
garblings.... ,,	22 0	..	30 0	20 0	..	39 0
SENEGAL .... ,,	2 10	..	2 15	2 0	..	2 15
SANDARAC........ ,,	85 0	..	107 6	90 0	..	100 0
SHELLAC, Orange.. ,,	107 6	..	180 0	240 0	..	292 6
Liver .. ,,	100 0	..	130 0	205 0	..	270 0
THUS .... ,,	20 0	..	22 0	21 0	..	23 0
TRAGACANTH, leaf ,,	280 0	..	390 0	220 0	..	390 0
in sorts ,,	25 0	..	175 0	30 0	..	190 0

OILS.

	£ s.		£ s.	£ s.		£ s.
SEAL, pale ....per tun	34 10	..	35 0	35 0	..	0 0
yellow to tinged ,,	30 0	..	33 0	33 0	..	34 0
brown ...... ,,	28 0	..	29 0	29 0	..	30 0
SPERM........... ,,	96 0	..	97 0	106 0	..	107 0
COD .... ,,	44 0	..	44 10	40 10	..	41 0

	1876.			1875.		
Oils, *continued*:—	£ s.		£ s.	£ s.		£ s.
WHALE, South Sea, pale, per tun	34 10	to	35 0	35 0	to	0 0
yellow ,,	32 0	..	34 10	28 10	..	35 0
brown ,,	28 0	..	30 0	26 0	..	28 0
East India, Fish ,,	24 10	..	0 0	23 0	..	0 0
OLIVE, Galipoli ....per ton	0 0	..	0 0	0 0	..	0 0
Trieste...... ,,	47 0	..	0 0	42 10	..	43 0
Levant .... ,,	0 0	..	0 0	41 0	..	0 0
Mogador .... ,,	0 0	..	0 0	40 5	..	0 0
Spanish .... ,,	0 0	..	0 0	0 0	..	0 0
Sicily ...... ,,	0 0	..	0 0	42 10	..	0 0
COCOANUT, Cochin.. ,,	40 10	..	0 0	43 10	..	44 0
Ceylon ,,	38 10	..	39 0	37 15	..	38 0
Sydney ,,	32 0	..	38 10	37 0	..	37 10
GROUND NUT AND GINGELLY:						
Bombay	0 0	..	0 0	0 0	..	0 0
Madras	34 0	..	0 0	35 0	..	0 0
PALM, fine...............	38 0	..	0 0	35 10	..	0 0
LINSEED	23 10	..	23 15	25 0	..	25 10
RAPESEED, English, pale ..	35 15	..	0 0	31 5	..	31 10
brown	33 10	..	33 15	30 0	..	0 0
Foreign, pale ..	37 0	..	0 0	33 10	..	0 0
brown	0 0	..	0 0	0 0	..	0 0
COTTONSEED	29 0	..	0 0	25 10	..	0 0
LARD	68 0	..	66 0	70 0	..	0 0
TALLOW	30 0	..	54 0	22 0	..	28 0
TURPENTINE, American, cks.	25 0	..	0 0	25 3	..	25 6
French ,,	0 0	..	0 0	0 0	..	0 0
PETROLEUM, Crude	0 0	..	0 0	0 0	..	0 0
	s. d.		*s. d.*	*s. d.*		*s. d.*
refined, per gall.	0 10¼	..	0 10½	0 10¾	..	0 10⅞
Spirit ,,	0 8½	..	0 0	0 9	..	0 0

SEEDS.

CANARY............per qr.	165 0	..	0 0	200 0	..	205 0
CARAWAY, English per cwt.	44 0	..	45 0	0 0	..	0 0
German, &c....	0 0	..	0 0	18 0	..	29 0
CORIANDER	12 0	..	18 0	8 0	..	18 0
HEMP..............per qr.	36 0	..	38 0	0 0	..	0 0
LINSEED, English per qr. ..	60 0	..	65 0	59 0	..	66 0
Black Sea & Azof	0 0	..	0 0	53 0	..	54 0
Calcutta ,,	50 0	..	0 0	56 6	..	0 0
Bombay ,,	51 0	..	0 0	60 0	..	61 0
St. Petrsbrg. ,,	0 0	..	0 0	54 0	..	56 0
Mustard, brown..per bshl.	0 0	..	0 0	0 0	..	0 0
white.. ,,	10 0	..	13 0	10 0	..	12 0
POPPY, East India, per qr.	53 0	..	53 6	54 0	..	0 0

SPICES.

CASSIA LIGNEA ..per cwt.	52 0	..	70 0	56 0	..	75 0
Vera .... ,,	22 0	..	44 0	24 0	..	50 0
Buds .... ,,	92 6	..	97 6	115 0	..	122 6
CINNAMON, Ceylon:						
1st quality ......per lb.	2 3	..	3 9	2 9	..	4 3
2nd do. .... ,,	2 0	..	2 11	2 0	..	3 3
3rd do. .... ,,	1 11	..	2 6	1 8	..	2 10
Tellicherry ...... ,,	0 0	..	0 0	3 3	..	3 5
CLOVES, Penang .... ,,	1 10	..	2 0	2 2	..	0 0
Amboyna .... ,,	1 5	..	1 6	1 8	..	1 9
Zanzibar.......... ,,	1 2	..	1 4	1 0	..	1 6
GINGER, Jam., fine per cwt.	100 0	..	202 6	110 0	..	200 0
Ord. to good .... ,,	60 0	..	95 0	79 0	..	100 0
African .... ,,	40 0	..	0 0	58 0	..	0 0
Bengal............ ,,	38 0	..	0 0	50 0	..	60 0
Malabar .... ,,	0 0	..	0 0	50 0	..	0 0
Cochin .... ,,	62 0	..	120 0	76 0	..	125 0
PEPPER, Blk, Malabar, per lb.	0 4¾	..	0 5	0 6⅝	..	0 7½
Singapore .... ,,	0 4¼	..	0 0	0 5¾	..	0 0
White Tellicherry ,,	0 10	..	1 4	0 11	..	1 6
Cayenne .... ,,	3 0	..	3 4	1 6	..	3 1
MACE, 1st quality .. ,,	2 2	..	3 1	2 11	..	3 6
2nd and inferior .. ,,	1 0	..	2 1	1 8	..	2 10
NUTMEGS, 78 to 60 to lb.	3 4½	..	4 3	3 8	..	4 4
90 to 80 ,,	2 11	..	3 4	3 3	..	3 6
132 to 95 ,,	2 6	..	2 11	2 7	..	3 2
PIMENTA	0 3	..	0 3¼	0 3	..	0 3¼

VARIOUS PRODUCTS.

COCHINEAL—						
Honduras, black ..per lb.	1 10	..	2 6	1 11	..	2 10
,, silver .. ,,	1 7	..	1 10	2 0	..	2 4
,, pasty .. ,,	1 6	..	0 0	1 9	..	1 11
Mexican, black.... ,,	1 8	..	1 11	1 10	..	2 0
,, silver.... ,,	1 7	..	1 8	1 8	..	1 0
Teneriffe, black .. ,,	1 9	..	3 2	2 0	..	3 8
,, silver .. ,,	1 8	..	1 10	1 11	..	2 2
SOAP, Castile......per cwt.	26 0	..	33 0	33 0	..	34 0
SOY, China	1 11	..	2 0	1 9	..	0 0
SPONGE, Turk. fin. pkd pr lb.	12 0	..	16 0	12 0	..	16 0
Fair to good ,,	4 0	..	11 0	4 0	..	11 0
Ordinary .. ,,	1 0	..	3 6	1 0	..	3 6
Bahama.... ,,	0 6	..	3 0	0 6	..	3 6
TERRA JAPONICA—						
Gambier ......per cwt.	25 6	..	0 0	26 6	..	0 0
Free cubes .... ,,	35 6	..	37 6	40 0	..	41 0
Cutch .... ,,	25 6	..	26 0	28 0	..	29 0
WOOD, DYE, Bar ..per ton	£3 5	..	£3 10	£4 15	..	5 0
Brazil .... ,,	0 0	..	0 0	9 0	..	27 0
Cam.............. ,,	19 0	..	24 0	25 0	..	34 0
Fustic, Cuba ...... ,,	8 10	..	9 0	9 0	..	9 10
Jamaica .... ,,	6 10	..	7 0	8 10	..	9 0
LOGWOOD, Campeachy ,,	9 0	..	10 0	9 0	..	10 0
Honduras ...... ,,	7 0	..	7 15	7 0	..	7 10
St. Domingo .... ,,	6 0	..	7 0	6 0	..	6 15
Jamaica .... ,,	6 10	..	7 0	6 0	..	6 15
LIMA, first pile .... ,,	10	..	11 0	13 0	..	14 0
RED SANDERS .... ,,	6 15	..	0 0	6 10	..	0 0

ANOTHER month of lassitude in almost all departments of commerce has passed, and the official reports indicate that our national trade is still declining in an alarming degree. In February last year we exported 17,467,256*l.* worth of commodities, whereas in the corresponding month of this year the shipments amounted to 16,482,505*l.* only, being a decrease of 984,751*l.* This is even worse than it looks at first sight, when we remember that the most recent February had a day extra for business. The exportations during the first two months this year exhibit a decrease of 1,316,999*l.* as compared with those in 1875, and of 4,564,253*l.* in 1874.

A most decided aspect of firmness, however, characterises the chemical market. Quotations for soda and bleaching powder, which are the most reliable indications of British chemical trade, show a distinct advance, and a fair business has been done in both, leaving off with good demand.

English tartaric acid remains dull at 1*s.* 6*d.* per lb., but foreign has sold to a good extent, quotations being 1*s.* 5*d.* to 1*s.* 5¼*d.* for crystals, and 1*s.* 5½*d.* to 1*s.* 5¾*d.* for powdered. Citric quiet at 2*s.* 10*d.* per lb. A recent note from Messina respecting lemon and bergamot says: "Market dull, with very few sales at falling prices. Sellers pretend to keep prices up, but give way the moment they run short of funds. There is a very considerable quantity of fruit still on the trees; this makes a further decline highly probable." Oxalic has sold to some extent, both spot and forward at 5*d.* per lb., market closing very firm.

Sulphate of ammonia only in moderate demand at 19*s.* per cwt. for best white in bulk, and 18*s.* 6*d.* to 18*s.* 9*d.* in packages for grey. Sal ammoniac unchanged in value, at 44*s.* and 45*s.* per cwt., but demand brisk, and supply short. Carbonate of ammonia selling to a good extent at 5*d.* to 5½*d.*

Potash.—Chlorate firmly held at 9½*d.* per lb., with a fair demand and less offering. Prussiate unchanged at 1*s.* to 1*s.* 0¼*d.*, Bichromate selling at 5*d.* per lb., makers' nominal quotations being 4½*d.*, but orders refused.

Sulphate of copper remains at 24*s.* 3*d.* per cwt. for ordinary first quality, and 25*s.* 3*d.* to 25*s.* 6*d.* per cwt. for superior makes, with a quiet business doing.

Refined saltpetre is still 21*s.* 9*d.* to 22*s.* 9*d.* per cwt., according to size of packages, with a moderate business doing.

Sulphur firm, at 12*s.* 6*d.* to 14*s.* per cwt. for flour, and 10*s.* to 10*s.* 3*d.* for roll, with a good business doing.

Refined borax remains at 53*s.* per cwt. net money for London make, with moderate sales. Alum rules steady, at 7*l.* 5*s.* to 7*l.* 15*s.* for lump, and 8*l.* to 8*l.* 5*s.* for ground. Arsenic in limited demand at 13*s.* per cwt., landed, for powdered. Sugar of lead sold to a moderate extent at 39*s.* for foreign and 40*s.* for English.

Sulphate of quinine, meeting with an increased demand, has rapidly advanced to 6*s.* 10*d.* for English, and 6*s.* 6*d.* for French manufacture.

Quicksilver has fallen 1*l.* per bottle, to 10*l.*, making a difference of 3*d.* per lb. in mercurials. It has recently transpired that a number of flasks of Californian quicksilver offered for sale in New York were under size. 76½ lbs. per flask is the standard weight, and yet some hold about 1-6th less, say 64 lbs.

There are few changes to note in the prices of drugs. Russian isinglass is lower, being now quoted at 10*s.* to 14*s.*, instead of 12*s.* to 15*s.* Balsam of Tolu and Peru are also lower. Oil of peppermint, both English and American, is easier.

In oils no transactions of any consequence have taken place in olive, and the price remains unchanged: when the demand does come it must almost inevitably occasion an advance. The present price is about 70*s.* below the average of the last six years, and it does not seem, if accounts from the producing districts can be trusted, that stocks are much, if at all, in excess of the average.

Turpentine has advanced and is now steady. Petroleum, after a short period of flatness consequent on very large arrivals, has now recovered, and is firm at 10¼*d.* to 10½*d.* Business has been done for September–December at 10⅞*d.* to 11*d.*

Shellac continues depressed, and shows a further decline of 10*s.* since our last.

NOTES AND QUERIES

We ask our readers not to hesitate about writing to us on all subjects connected with the trade. We shall not publish correct names if any substitute is given us. Short, pithy notes, fragments of trade information, answers to queries, questions, all will be welcome. Our own staff is very apt to get idle unless kept constantly on the mill. All of us will be the better for the interchange of ideas and experiences. The Italians say, "Every man needs another once in ten years;" a French proverb tells us that "One barber shaves another;" and the ancient Greeks had observed that "One hand washes the other" (χεὶρ χεῖρα νίπτει). This consensus of opinion may fairly induce the members of our guild to make use of the common ground which we offer.

Nemo.—Under the circumstances you narrate there does not seem to be any doubt at all in the matter. We do not see any reasonable ground on which your apprentice could refuse to assist in the manner you suggest, and if he be a lad of ordinary sense he will perceive that it is to his own interest and advantage to benefit by so good an opportunity of mastering his business.

S.—To produce a bright-looking *Green Oil* four things are essential—the elder leaves should be collected not too old; they should not be kept too long after collecting; the oil, whether olive or rape, should be perfectly sweet and the heat employed should be very gentle. Failure follows neglect in any one of these particulars, but perhaps the most common cause of it is the use of too great heat. Sugar crystallises out of syrup of violets because too much has been used in preparing the syrup. Note, therefore, the quantity which separates from a given bulk of syrup, and use so much less next time.

Pigmentum.—"Colourless Tincture of Iodine" is official in the German Pharmaceopœia, and is thus prepared:—

℞	Iodi	10
	Natri Subsulfurosi..	10
	Aquæ Destillatæ	10

Digest with a gentle heat, occasionally shaking, and when solution is effected add—

Liquoris Ammonia..	16

After again shaking for some seconds, add—

Spiritus	75

Set aside in a cool place for three days, and filter. The product should be clear, colourless, of a peculiar slightly ammoniacal odour, and have a specific gravity of ·940 to ·945. The liquor ammonii used in making this has specific gravity ·830, and the spirit ·834. We suppose that when colourless tincture of iodine is ordered the above preparation is intended, but neither it nor any of the modifications you mention is likely to prove an exact substitute for the tincture of iodine. Have you any reason for thinking they are meant to be?

Alpha writes to inform us that at the Welsh National Eisteddfod to be held at Wrexham next August there is a prize of 7*l.* and a silver medal offered for the best collection of dried plants indigenous to North Wales. But as the habitat need not be specified, there can be no valid objection to plants gathered in England, as most British plants are indigenous to both countries. Further particulars, with list of adjudicators, may be obtained by enclosing four postage stamps to R. Williams, Esq., Secretary to the Eisteddfod Committee, Wrexham, North Wales.

The *Oswestry Advertiser* lends its columns to "a correspondent," evidently a doctor, for the insertion of the paragraph from the *British Medical Journal*, characterising the prescribing druggist as "a mischievous pretender, and a legally punishable quack." The editor of the paper ought to have known better than to permit the insertion of a libellous slander, which was sent to him, clearly, only to gratify a personal spite, but what can we think of the conduct of a member of the honourable profession who gets behind the skirts of an editor to attack his neighbour. The chemist who sends us the cutting, and who feels himself pointed at, is naturally somewhat indignant, but his logic is not perfectly clear when he writes that "as long as surgeons dispense their own medicines, or keep some dirty errand lad to do it, I think chemists are not going to consult their feelings as to how they are to conduct their businesses, when it is as lawful for them to prescribe as for the surgeon himself." Unfortunately, the opinion of Mr. Baron Bramwell on the legal point is precisely contrary to that of our correspondent.

The recent attack by the Board of Inland Revenue on some unstamped medicines seems to have excited the alarm of a good number of subscribers, who have consequently sent us a number of labels, asking if the medicines they cover are liable to stamp duty. We think it desirable to point out that in these cases our judgment can only be fallible. We have printed in our

Diary for 1876 a very definite abstract of the medicine stamp law as far as it could be got at. Most of the questions submitted to us would be quite unnecessary if that article had been read previously. In cases of real doubt, too, we should suppose an authoritative reply from the Inland Revenue Board, Somerset House, would be preferable in respect to reliability to any opinion which outsiders might hazard.

Messrs. Churchill refer to our answer to *W. L. B.* in last issue, and inform us that a new edition of the work, which we said was "not a recent" one, was published during 1875, and that the price has been raised to 10*s.*

Turpentine.—The medicines are liable to stamp duty, except the Teething Powders, which, if not elsewhere recommended, would most likely be passed. But you had better apply to Somerset House. Nervine Balsam (or Ointment) is an old Pharmacopœia compound. It is used in cases of rheumatism. We give the formula from the French Codex:—Expressed oil of mace and ox marrow, of each 4 ozs. Melt by gentle heat, and add: oil of rosemary, 2 drms.; oil of cloves, 1 drm.; and 4 drms. S. V. R. in which has been dissolved camphor, 1 drm., and bals. Tolu, 2 drms.

Enquirer (Hastings).—Having passed the Minor examination you are undoubtedly a "chemist and druggist by examination," and you may legally advertise yourself as such.

John Clark (Brooklyn).—Thanks for your remittance. There is some one of your name on the register who passed Minor at the date you give address "Dumfries." If you are he you need only apply to have your address corrected. By the Pharmacy Act, section 20, you are eligible for election as an "Associate in Business." You will have to pay a guinea a year for that distinction if you decide to take up your honour. Make application to the Secretary, 17 Bloomsbury Square.

The Pharmaceutical Society.—A Registered C. & D. quite agrees with the remarks of *A Country Member* in our last. He has always thought the Pharmaceutical Society a curse to the druggists at large. They make assistants pass an expensive examination, and offer them no advantage. If all prescribing is to be set down as illegal, our correspondent asks what are assistants learning up for? Merely to stand and sell salts and senna. Doctors will not sell a few pennyworths of medicine, and in small towns there are no dispensaries to take the children to. The practice of surgeons, dispensing ought to be done away with at once if chemists and druggists are not to be allowed to prescribe a little.

Alpha asks: "Can any correspondent oblige me with a cheap, simple, and effectual mode of preserving specimens of flowers and plants so that they will maintain their colour?" The great drawback in herbarium specimens is both the fading of the colour and the blackening which many *flowers* especially undergo. This is avoided to some extent by very gradual drying and gentle pressure. A German method of preserving coloured specimens entire is to place them while fresh in a frame with a slide, movable bottom. They are then carefully covered with dry silver sand, and exposed to the sun's rays, no stove heat being applied. When thoroughly desiccated, the sand is run off from the bottom, and in this way many beautiful samples of dried ornamental flowers are offered in the market.

J. J. T. finds fault with this journal because, he says, "like the *Pharmaceutical Journal*, it agitates for the London druggists only." "One grievance," he continues, "of myself and other country druggists is this. We get apprentices with difficulty, and one of the reasons assigned by parents is this, viz.: That they do not know whether their sons, when out of their time, know their business or not, as they cannot pass the Minor examination until they are twenty-one years of age. The remedy I should wish for is that the apprentices might pass at any time, irrespective of age, provided they were able so to do, for then a master would have a double interest in the advancement of the lad apprenticed to him." This difficulty, it seems to us, is as likely to occur to a druggist in London as to one in the country. But aside from that, it should be remembered that the Minor examination qualifies a man to be a chemist and druggist. Does our correspondent think that a youth under twenty-one ought to be stamped as competent to conduct a pharmacy, however quick he may be in answering chemical and botanical questions? Ought not the line to be drawn somewhere? and if so, is not twenty-one quite low enough?

Mr. Brockwright (Romsey) sends us the subjoined formula for American Bay Rum:—

Oil of Bay	10 fluid drms.
Oil of Pimento	1 fluid drm.
Ether Acetic	2 fluid ozs.
Alcohol	3 gallons.
Water	2½ „

Mix and filter after a fortnight.

R. H.—(1) To dilute carbolic acid to half its strength we should think the best substances to mix with it would be either methylated spirit or acetic acid. (2) Royle says: "The Smilax Aspera of Greek authors continues to be employed in medicine." If so you could probably obtain some from your wholesale druggist. The concoction of a syrup from it would not be a difficult task.

F. wishes to hear of the best manual embracing the art of electro-gilding and silvering, and *Silicon* asks for a work treating on the analysis of silicious substances, as enamels, &c.

Beta.—We do not think the title you mention, dissociated from the maker's name, could be maintained as a monopoly. If any one else used the title, however, even with another name, the style of labels, &c., must not be imitated, or a jury might consider that "colourable imitation" had been attempted.

Our attempt to enlighten (or rather endarken) the world last month with a formula for polish for patent leather goods was not successful, and its weakness has been pointed out to us by a correspondent signing *T. R. J.* Two quarts of water and 4 ozs. of vinegar should be added to the formula before boiling, and 4 ozs. each of sweet oil and spirit afterwards.

J. J. W.—Gold can be applied to glass by mixing into a paste powdered gold and gum mucilage, adding a little borax. Having painted with this compound, the article must be heated in an oven. This burns the gum, while the borax vitrifies, and thus fixes the gold. To apply silver to glass requires a more elaborate method. Take arg. nit. ʒij., aq. dest. ℥ij.; then add liq. ammon. dil. until the precipitate first formed is dissolved. To this add ½ oz. caustic potash dissolved in 8 oz. aq. dest. Again dissolve the precipitate with ammonia added gradually, stirring meanwhile. Now add another solution of arg. nit. like the first; stir well, and make up the solution to 100 ozs. with aq. dest. To apply this the glass must be suspended face downwards on the surface for about an hour, the liquid kept at about 80° F., and reduced with the following:—

Sacch. Lact. pur. ℥ss.
Aq. Fervent. ℥x.
S. V. R. ♏x.

Perplexed.—So is everybody else. According to Baron Bramwell you are legally prohibited from giving the customer a mixture for indigestion, or any other disorder. The Medical Defence Association will hardly dare to enforce this law except in very flagrant cases. According to this ruling, the herbalist would be liable equally with the chemist and druggist. We cannot think, however, that you need trouble yourself very greatly about the matter. The prescribing for minor complaints by chemists is too great a convenience to the public to expect that it can ever be seriously interfered with.

Thermos wishes to know whether he can obtain in England the paper used in the manufacture of fly-paper, and if so, where?

W. P. C. and *C. R. A.*—We do not think either of the labels are liable to medicine stamp duty, but for perfect assurance we recommend in each case application to the Board of Inland Revenue, Somerset House.

J. R.—The little book you refer to is called "Wild Flowers worth Notice," by Mrs. Lankester, with coloured illustrations, 4*s.* (Hardwicke).

Harry.—Size your labels by carefully painting them with a thin solution of gum arabic, a little more than covering the edges of the labels; when quite dry they can be painted again with a copal varnish.

C. R. A.—The British Pharmacopœia does not admit any spirit into aq. camph. Consequently, if you prepare yours with any essence of camphor (which must be a spirituous solution) you will get an ingredient foreign to the true compound, and will also have an extra strength of camphor.

W. B. writes: "The house-fly troubles me considerably during hot weather, spoiling labels and making glasses and windows in a mess. Can you tell me what will *keep them out of the shop altogether?* If you can I shall esteem it a great favour. Penny Royal will drive mosquitoes away." Presuming that the fly and not the glasses and windows is the object of expulsion, we do not imagine there is any other method of accomplishing the end sought for than by hermetically sealing the shop from all contact with the atmosphere, just as Professor Tyndall keeps his turnip solutions free from bacteria.

The following are literal copies of the three prescriptions dispensed in Sheffield which were found deficient in their most important ingredients:—

Quin. Sulph., gr. xvi.
A. Sulph. dil., ♏x.
Syr. Simpl., ℥j.
Aq. ad ℥viii.

A second was:—

Quin. Sulph., gr. 40.
A. Sulph., ♏xx.
Syr. Simpl., ℥i.
Aq. Dest. ad ℥viii.

The third was:—

Potass. Iodid., gr. 120.
Spts. Ammon. Arom., ʒiii.
Aq. ad ℥viii.